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"I cannot help plead to my countrymen, at every opportunity, to cherish all that is manly and noble in the military profession, because Peace is enervating and no man is wise enough to foretell when soldiers may be in demand again."—GENERAL SHERMAN.

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THE GREAT LESSON OF THE BOER WAR.

BY MAJOR JAMES CHESTER, U. S. ARTILLERY (RETIRED).



ONE rarely looks into a recent magazine or review without encountering an article on "The Lessons to Be Learned from the Boer War." Many of them, the most amusing ones, although unsigned, appear to be from professional pens. Of course, among such a mass of material much that is valuable may be found; but the taste that remains in a man's mouth after swallowing the mass is rather unpleasant. Not so much perhaps for what is said as for what is overlooked. One cannot object to the training and teaching of Tommy Atkins, as he is called, to the limit of his capacity; but the expectation that he can ever become capable of commanding himself in the most trying situations which a soldier can occupy, is, to say the least, decidedly doubtful. Still, many magazine writers appear to believe that the education and training of the man behind the gun until he is able to direct and control his own actions in battle is the lesson to be learned from the South African war.

The idea is rather fascinating; but is it possible of attainment? If the army consisted of a single man, or even a squad or a company, individual independence might be tolerated if the men were intelligent and trained; but as the line of battle lengthens independent action by even the best of men would be ruinous. It is a favorite belief with some men

that soldiers can be trained to think and act alike in emergencies. Experience soon dispels that belief; success can be attained only by perfect co-operation of every link in the line, and perfect co-operation is inconsistent with individual independence in lines of battle of any length. If individuals, no matter how numerous, each acting on his own initiative and in his own way, can conquer an enemy of anything like equality in numerical strength, then organization, discipline, drill and tactics are old-fashioned fads which ought to be discarded.

The principles upon which the art of war rests are unchangeable, but the methods of their application vary with the character of the adversary and the theatres of operation. A man may have hunted Indians in the Everglades until he fancies he knows all about that kind of warfare, and ventures to publish a pamphlet on the subject. He calls the pamphlet "The Best Way to Fight Indians," perhaps. Another man who has graduated in Indian warfare as it is practised on the plains gets a copy of the pamphlet, and having read it promptly pronounces the author a fool. Yet both believe in the eternal principles of their art, and apply them differently, only because circumstances compel.

The idea that intelligence, ability and freedom of action in the men behind the guns would enable them to dispense with commanders in action is not a new one. Was it Artemus Ward who conceived the idea of enlisting a company of brigadier-generals during our civil war? Artemus was a patriot, and wished to go to the front and do his best for the flag and all that it represented. He had set his heart on being a captain, but he was painfully conscious of the fact that he knew nothing about the business. If, however, he could enlist a company of brigadier-generals, the company would be able to take care of itself. The captain would have nothing to do but keep them in sight and cheer, and he felt that he could do that. But this ideal company never materialized, and Artemus never joined the army. He is entitled, however, to whatever credit is due to the man who first conceived the idea of putting brigadier-generals behind the gun. And he did that thing during our civil war, many years before the recent Boer war was dreamed of.

It is hardly fair to rob Artemus of his grand idea, but recent writers are not so generous as the great American

humorist was. He conceded the rank and title, and presumably the pay of brigadier-generals to the men he proposed to place behind his guns. Not so the modern reformers. They demand character, courage and ability equal to those possessed by any brigadier, and they seem to expect to get them for a private's pay. One cannot help thinking that their ideal army, like Artemus Ward's ideal company, will never be able to materialize.

Do not for a moment believe that we despise intelligence, education and training among the soldiers in the ranks. What we doubt is that they can ever be cultivated so as to make discipline at all times, and direction and control on the field of battle, unnecessary. Modern writers, or some of them, seem to think that war has become something closely akin to deer-stalking, in which the wind, and every fold and furrow of the ground are important factors. They believe that battles can be won by what has come to be called "sniping." That courage is less important on a battle-field than keenness of vision, and that war is merely a contest in killing. They recognize that the troops on the defensive, having deliberately selected their position, and improved the natural cover and concealment that it affords, have every advantage. No one cares to dispute that fact. But is there any necessity for attacking the stronghold? Deer-stalking tactics might be resorted to, and the position might be carried at heavy loss; all of which may be "beautiful," but it is not war. It is a wanton waste of a nation's most precious treasure. It is blood thrown away. These are the views of an old soldier, and probably an old fogey. He denies the necessity and therefore the wisdom of any such attacks. He repudiates deer-stalking tactics for any troops but scouts, and he deplores the existence of any idea that would transfer the control of an attack at the very crisis of the action to the men behind the guns. Moreover, he maintains that the Boer war teaches no such lessons.

The Boer war may be divided into three distinct periods. The first is included between the first arrivals of British troops and the arrival of Lord Roberts. The second between the arrival of Lord Roberts and the occupation of Pretoria. The third between the occupation of Pretoria and the final surrender of the guerilla chiefs. The first was, properly speaking, a period of preparation, during which political consider-

ations and conditions existed when British troops were in a hopeless minority and unable to defend British territory against the invading armies of Boers. During this period many ill-advised and unsuccessful operations were undertaken by British commanders, and no satisfactory explanation of them has yet been made. Perhaps something akin to the senseless cry of "On to Richmond!" which drove a Union army into disaster at Bull Run, may have had to do with them. If so, and indeed under any consideration, the lesson taught is, Do not voluntarily enter the ring until you are ready. Stand on the defensive until you are thoroughly equipped for aggression.

The second period belongs to the category of regular war. The army was ready and assumed the offensive. Deer-stalking tactics are nowhere visible. Not that opportunities for their use were lacking; there were many positions practically impregnable between Paardeburg and Bloemfontein, and again between Bloemfontein and Pretoria, but none of them was subjected to direct attack, and yet every one of them was taken. They fell before the operations of regular war. If it had not been for the hardships resulting from the destruction of his commissary train, Lord Roberts' march from Paardeburg to Bloemfontein would have been a walk-over very much like Sherman's march through Georgia. Why is there such a difference between the operations of the first period and those of the second? Principally because during the second period the army was equipped. Lord Roberts' hands were untied. He could outflank the formidable positions which came in his way, and thus compel their abandonment by the Boers without firing a shot. It was very different during the first period of the war. Commanders had to operate, if they operated at all, with their hands tied. The mules which would have given them liberty of action were still grazing in the valley of the Mississippi. But their unsuccessful attempts, although expensive in men and materials, reputation and prestige, were not altogether useless. There is a strong parallel between Colenso and Cold Harbor. The assailants suffered severely in both cases, and failed. Unjustifiable and reckless were the verdicts of the newspaper press. And yet Cold Harbor made Sherman's march to the sea a walk-over, and Colenso cleared the path of Lord Roberts in his march to Bloemfontein. Cold Harbor

convinced Lee that Grant really meant "to fight it out on that line if it took all summer," and therefore he ordered every available soldier from the South to join the army of Northern Virginia. Colenso convinced the Boer leaders that Sir Redvers Buller meant to cut his way to Ladysmith at all hazards, and they therefore held on to every commando in the army covering the investing force at Ladysmith until it was too late. Colenso and Cold Harbor were fruitful disasters, although very few were able to see the fruit at the time.

The third period is perhaps the best example of guerilla warfare that we know anything about. Much has been said in praise of the guerilla chiefs, and De la Rey's escapes and surprises seem little less than miraculous. And yet investigation shows that there was nothing extraordinary about them. Col. Mosby operated within fifty miles of our national capital for nearly four years, and although sometimes surrounded by hostile armies, and actually living inside their lines, was never captured. How did he escape? Simply because every man, woman and child in the district where he operated were spies voluntarily in his service. Not an expedition or scouting party could start out from any part of the Union army but Mosby had early information of its strength and destination. It was easy enough, therefore, to get out of its way, or when deemed advisable to ambuscade or surprise it. Mosby's command was small; it had less than a hundred men in its permanent organization; but recruits from the peaceful farmers of the region increased its strength for special service to two or three hundred. When the special service was accomplished the extra men resumed their open occupations as peaceful farmers, and their secret occupations as scouts and spies. Mosby was a successful guerilla in Virginia, but if he had accompanied Lee's army into Pennsylvania he would have failed. It was the friendly inhabitants who gave him success.

And so it was in South Africa. So long as friendly families were permitted to remain on the farms the guerilla leaders were safe. After the British concentrated the Boer families and held them under surveillance they were less safe, and, as winter approached, less and less comfortable. Surrender was imperative. Shelter gone; food difficult to get; ammunition at a very low ebb; horses, hardy as they were, almost

exhausted; scouts and spies for the most part under strict surveillance; grazing gone, and starvation for man and beast staring them in the face, what else could they do?

Guerilla warfare is inconsistent with civilization. Whoever resorts to it compels his adversary to appeal to the ancient tactics of extermination. The invader who has dispersed all opposing armies, and driven the government of the invaded country over the border, who also has occupied and holds its capital and all the principal lines of communication within it, has a right to demand and expect a surrender. When such demand is refused, war changes its character. The country may then be laid waste, and all its inhabitants killed or captured and disposed of at the conqueror's pleasure. Prisoners of war belong to a category very different from captured guerillas, and when that difference is not recognized the nations are beginning to drift in the direction of barbarism. Sentiment is out of place in the councils of war, and kind-heartedness is cruelty. While war remains legitimate, defeated belligerents can claim the rights which civilization accords to prisoners of war. When it passes beyond legitimacy those rights are forfeited. Many, no doubt, will condemn these views as the sentiments of a savage, and no doubt they are tinged with barbarism; but war is a brutal business and should never be prolonged. The shortest road to peace under the customs of civilized war is the true path to be followed by the vanquished and the victorious, bearing always in mind that the vanquished guerilla must be beaten into surrender, and not bribed. After he surrenders in good faith he may be accorded the right hand of fellowship, if his conquerer considers him worthy of it; but he has no rights, he can claim nothing.

After the survey of the whole field, and specially considering the first and second periods of the war, is there anything stands forth with such prominence that one would be justified in pointing to it as the feature which teaches the great lesson of the South African war? The shortest way to answer this question, perhaps, is to state the lesson. Readers will be able to observe that the absence of a certain thing caused all the disasters, and the presence of that thing made all the successes possible. The lesson is: *That armies should always have sufficient transportation.*

THE EDUCATION AND TRAINING OF ARMY OFFICERS.

BY MAJOR WILLIAM MURRAY BLACK, CORPS OF ENGINEERS.



A YOUNG mathematician may be excused for languor in studying the curves to be described only with a pencil, but not in tracing those which are to be described with a rocket. Your knowledge of a wholesome herb may involve the feeding of an army; an acquaintance with an obscure point in geography the success of the campaign. Never waste an instant's time, therefore; the sin of idleness is a thousand-fold greater in you than in other youths; for the fates of those who would one day be under your command hang upon your knowledge; lost moments now will be lost lives then, and every instant which you carelessly take to play you buy with blood."

Thus speaks John Ruskin in "The Crown of Wild Olive" to those preparing for a soldier's life.

It were well, indeed, if the truths contained in the above sentences were impressed upon the minds of all our countrymen—of the many, our rulers, the people, who, engrossed in civil pursuits, yet determine the state of preparedness or unpreparedness of the army for its terrible work, and through their votes and influence fix its fate; and of the few who wear the uniform and have selected the soldier's work as their profession. The responsibility for providing means and incentive for training is with the civilian—for taking full advantage of the opportunities offered, with the soldier. The general welfare requires that each class shall do its full duty.

In civil life those professions which deal with life and death, such as medicine, surgery and pharmacy, are safeguarded by law from practice by the untrained, and a similar protection is advocated for engineering and architecture. When it is a question, not of the life of one man, but of hundreds, not of the well-being of a community, but of a nation, how much greater is the necessity for legal protection against ignorant practice, no matter how patriotic or well meaning the individual.

The days when each man was perforce trained in the use of weapons, and when the heads of each community attained and held their positions and lives through their ability as military leaders, have long since passed. But the tradition remains, and the impression is widespread that a commission, a uniform, and plenty of good will, with or without some knowledge of drill regulations, are all that are required to fit a man to be a soldier in any grade. The lessons of a war seem necessary to teach the American people the direful distinction between an amateur and a professional soldier. It seems absurd to state such truisms, and in no other of the great nations of the world would an argument be required to establish the belief that arms is a profession demanding for its higher ranks the long training of mind and body, the special aptitude, and the experience which are conceded necessary for the professions of civil life.

"This condition is a strange one where insistence is made that the patriot's duty is to die, if necessary, for his country, while making almost no provision to enable him to do so with dignity and effect, by giving him a soldier's education and training, which would at least enable him to protect his own life and health in the field, and possibly do some damage to the enemy before his own career was ended. * * * *

"The officer's duties involve vastly more than the aligning or wheeling of his command or putting them through the manual of arms. There are the duties of camp and march, of guards and reconnaissances, of outposts and security, and how to live in the field and endure the hardships of campaigns, and, above all, the handling of men on the battle-field. It is a crime to deliver over the thousand men of a regiment to the conduct of inexperienced and uninstructed commanders, and make them responsible for the lives and safety of the men in the field and for the securing of military results in actual combat. Aside from the inhumanity of this course, the useless sacrifice of lives, the desolation of homes, and the multiplied additions to the sum of human misery, it is enormously wasteful, both in blood and money. Humanity is a costly material and with difficulty replaced, and the expenses incurred, in pay, food, clothing, equipping, and transporting and withdrawal from productive employment, are all wasted if the citizen is to be used as a mere bullet-stopper or typhoid victim. It takes not less than two years of hard work to

learn a soldier's trade, and if he is to be used as a soldier, he is entitled to learn his business, and particularly to be protected from useless sacrifice at the hands of incompetent commanders. This view should also recognize the seriousness and magnitude of the national interests at stake when hostilities are in question, and due consideration of the immense swiftness and concentration and the implacable onset of modern warfare, that leaves no time for the painful acquirement in the field of habits and faculties that a public school and merely peaceful pursuits are unable to impart."*

Conceding the sad necessity for preparation for war, it is the duty of the patriotic civilian to recognize fully the dignity of the profession of arms, to foster it by wise laws, and to protect it from ignorance and sloth, or discouragement, within its ranks, and from untrained and uneducated intrusions from without.

Like the professions of civil life, a technical training in military affairs alone will rarely bring its possessor to the highest walks of his calling. A general education is also a requisite—the broader the better—and it is recognized that this must begin at an early age, and that the boy's life is an important consideration when selections are to be made for the man's work of a country's defense. The training must begin in earliest boyhood and must continue until the active career is ended in a soldier's grave or in the honorable rest of age.

Recent events have stirred up the English people on the conditions in the British army. Oral and written discussions and criticisms culminated in a Parliamentary investigation into the education and training of the British officers. In the able report of the Committee and the published discussions of the question which have appeared in the technical journals, is found valuable testimony from competent witnesses as to the training and education required for the British service. Drawn as this is from a worldwide experience in wars of all kinds and of varying degrees of success, and applied to a race which by tradition and standard is most nearly akin to us, this testimony is of the greatest value. The Committee makes its report under three heads, (a) the antecedent edu-

* General Ludlow's report.

cation of the Army Candidates; (b), the intermediate education of the same; (c) the military education of the officer.

It is proposed in this article to review as briefly as possible the means adopted by a few of the leading nations to provide a properly trained corps of officers, and to show the standards recognized as desirable in each stage of the training, following the general lines of the British report.*

THE ANTECEDENT EDUCATION OF ARMY CANDIDATES.

The Germans with characteristic thoroughness begin the training of their future officers as far as practicable at the age of ten, when students are admitted to the lowest grades of the preparatory Cadet schools. Of these there are eleven, with a total capacity of about 3,000 (including the one High Cadet School, and classes of the same grade at each of two other schools). These schools have a five years course, and the studies correspond closely to those of the first-class technical schools of Germany.

The entrance examination is limited to simple arithmetic and reading and writing in German, and the studies include instruction in religion, German, Latin, French, English, arithmetic and higher mathematics, history, geography, natural history, physics, free-hand drawing and writing. It will be noted that strictly military subjects are not taught.

The expenses of the students are defrayed wholly or in part by the state for sons of officers, of non-commissioned officers, or of civilians who have highly distinguished themselves in the service of the state, other students paying varying sums up to \$356.00 annually.

After graduation at these preparatory schools a further training is given at the Cadet High Schools, which come more closely under the head of "intermediate education," and will be treated of later.

The objects of the instruction at the Cadet schools are well stated in the following extracts from a memorandum order of the present Emperor.

* The leading authorities quoted are the Parliamentary Report of the Committee on "Education and Training of Officers of the Army" (British), 1902; Dr. T. Miller Maguire's article on Military Education in England, found with discussions in the August number of the Journal of the Royal United Service Institution; "Military Schools of Europe" No. 9, Military Information Division, A. G. O.; and an unpublished report of the late Brig. Gen. William Ludlow, on military education in Germany.

Memorandum by William II., German Emperor, on the subject of the Curriculum at Military Cadet Schools.

"Armee Verordnungs Blatt," 14th February, 1890, No. 36.
Organization, &c., of the Cadet Corps.

"I consider it necessary that the curriculum of study in the Cadet Corps, which, in his unceasing care for the well-being of the Army, my late grandfather, the Emperor William I., founded on the lines of that given at the Royal Gymnasia, should be increased and rendered more thorough in the following points:—

1. The aim and object of all, and particularly of military education, is the formation of the character by simultaneous physical, scientific and religious schooling and training. No branch of the education must be forced at the expense of another. According to my ideas the scientific course of instruction of the Cadet Corps makes, at present, too great demands on a large number of the scholars. The instruction must be simplified all through, especially by a thorough sifting out as regards what it is necessary to commit to memory, and the eliminating of all superfluous detail so that even the less talented pupils can, with fair diligence, follow the instruction without over-strain and get through the whole course in the prescribed time. What is lost in quantity will be gained in quality. The instructors in every subject will proceed straightway to arrange their methods of teaching at each stage according to this idea.

2. At the same time with simplification, the instruction must be made also more useful. Cadets must not only be given the immediately necessary preparation and preliminary knowledge to follow the military profession, the mental equipment to train and teach properly in the Army, the great school of the nation, but also to hold their own in case they should take up any other than the military calling later.

In religious instruction the ethical side must be made prominent, and the main stress laid on bringing up the scholars in the fear and trust of God, so that they will be strict in dealing with themselves and patient in dealing with others. They must be made to realize that the manifestation of their loyalty and devotion to their rulers and country, and the proper carrying out of all their duties are enjoined by the Commandments of God.

In the study of history knowledge must be imparted, more than has formerly been the case, in modern events and their effect on our own country. To this end special stress will be laid on German history, particularly of the later and latest periods, while the ancient history, and that of the Middle Ages will be made use of rather as providing examples of heroism and historical greatness, and likewise as giving a general view of the changes and developments of our civilization.

The geographical instruction, both political and physical, must be made to exemplify and support the historical studies. Its

further object is that the student will know thoroughly all about the geography of his own country and its peculiarities, and also understand and appreciate that of foreign countries.

The study of German is the important point of the whole course of instruction. The scholar must be instructed in every step of his progress in the correct use of his mother tongue. Special consideration must be given to the choice, both in German language and literature lessons, of extracts for reading, lectures and essays, bearing on the traditions, civilization and classics of ancient times and the subjects and writings referring to German traditions. The student will also be made acquainted with the literary development of the other important civilized nations by an introduction to certain of their literary masterpieces.

In the study of modern languages the student will be encouraged and instructed from the very commencement in the practical use of the tongue."

(Signed) WILHELM.

Berlin, 15th Feb., 1890.

Only about one-third of the requisite annual supply of candidates for commissions can be obtained from the Cadet schools. The remainder are drawn from civil life, the first appointment being to the grade of Ensign (Fähnrich), a non-commissioned grade below that of First Sergeant. The applicant for this grade must be between 17 and 23 years of age, of good education and standing, and enter service with a regiment, declaring his status as an 'aspirant officer' (or *Fahnenjunker*)."*

The Austrian system is quite similar to the German.

In France the candidates from civil life for commissions are trained at the *Ecole Polytechnique* (which also prepares candidates for the scientific corps of the civil service and the Navy) and at the special military school of St. Cyr. Entrance to each is secured through competitive examinations held annually in various parts of the republic. Candidates must be between the ages of 17 and 21, and must have certain other qualifications. The entrance examinations call for an excellent preliminary education, requiring a knowledge of algebra, geometry (analytical and descriptive), trigonometry, mechanics, physics, chemistry, French language and literature, German, and mechanical and free hand drawing, as well as for a good physique. The charges for board amount to about \$200.00 per year, with additional charges for outfit.

In England the supply of officers is obtained from four sources, the Royal Military Academy at Woolwich (which

* Ludlow.

prepares officers for the Royal Engineers and Artillery), the Royal Military College at Sandhurst (from which graduates go to the Cavalry and Infantry), the Militia and the Universities. It is now recommended that service in the Yeomanry shall also be included. Commissions are given to the graduates of the two military schools as vacancies occur. Candidates from the other sources are selected after competitive examinations.

The report of the Parliamentary Committee before mentioned states the defects of the existing British system, and makes certain recommendations for its betterment. As these recommendations have met with wide acceptance, and already are very largely carried into practice, it is but fair to consider this report as showing the standards recognized as desirable in the British Army. In the following synopsis the language of the report is followed as far as practicable:

It was found that officers of the Army as a class were deficient in both general education and in technical training, so that it was no uncommon thing to find officers unable to write a good letter or draw up an intelligible report.. The responsibility for this was placed on the system of competitive examination followed for entrance to the military schools, and for commissions from the Militia and the Universities. Candidates were compelled to take up too many subjects, and there was no adequate provision for testing whether they were well grounded in the fundamental parts of any, so that the system prevented the formation in early life of the habits of accuracy necessary in a soldier, and did not encourage that training of the mind which is the essential feature of real education, but instead put a premium on the mere temporary acquisition of unassimilated knowledge. Sufficient importance also was not given to English language and history.

The Committee believe that all officers should have a sound general education, and that therefore candidates who desire to enter the army either through Woolwich, Sandhurst, the Militia or the Yeomanry should be examined simultaneously, those coming out at the top of the list, to the number of vacancies available, provided that they have qualified in mathematics, being given the option of entering at Woolwich (for the Engineers or Artillery), those next on the list being permitted to go to Sandhurst (Infantry or Cavalry), and the

remainder who have reached a qualifying standard should be exempt from a further literary examination should they subsequently elect to enter the army through the Militia or Yeomanry.

In making a choice of subjects for the proposed examinations endeavor has been made "to secure, on the one hand, the acquisition of knowledge likely to be useful to the officer in his military career, and on the other hand, to encourage that which is of still greater importance, the right training of the mind, that is to say, the development of the power of acquiring knowledge, and of using it when acquired.

"Following out the above considerations the Committee have come to the conclusion that five subjects, English, mathematics, a modern language, Latin, and experimental science may be regarded as supplying a sound general education, and may therefore be adopted as the basis of that part of the examination which is to serve as a qualifying test."

In support of this choice it is stated that "every officer in His Majesty's service ought, in their opinion, to be able to express himself clearly and correctly in his own language, and to have a reasonable knowledge of the outlines of the history and literature of his country, and of the geography connected with it."

"So far as mathematics are concerned * * * (for young officers for service in the Cavalry and Infantry), all that is really necessary * * * is that they should be able to solve simple arithmetical and algebraical problems and to make use of their knowledge of geometry and elementary trigonometry in their work in topography and military engineering. * * * On the other hand, it is important that those cadets who desire appointments in the Royal Engineers and the Artillery should reach a high standard of mathematical knowledge."

"The study of languages forms a third main feature of a sound general education. Of these the most important from an educational point of view is Latin, and the Committee have been impressed by the evidence, which they have received from military witnesses as well as from teachers, in favor of retaining Latin in the examinations."

"Modern languages, though much inferior to Latin as a means of mental discipline (at least as generally taught), must none the less be regarded as an important part of a sound general education. And for an officer it is most desirable that he should be able to converse freely in French or German, or both, and to read

with ease the important military literature of France and Germany." * * *

"The fifth subject which may be considered as an essential part of a sound general education is * * * the Science of Physics and Chemistry, treated experimentally. As a means of mental training, and also viewed as useful knowledge, this may be considered a necessary part of the intellectual equipment of every educated man, and especially so of the officer." * * *

"Each of the above subjects has an educational value of its own, and each has claims to be considered as a necessary element in general education. * * * But to demand from every candidate a competent knowledge of every one of the above five subjects is, in the opinion of the Committee, to demand too much. They believe that every candidate may reasonably be expected to show a competent knowledge of four of these subjects, but that to insist on all five would be too great a strain. They, therefore, propose to make in this part of the examination, four only of the five subjects compulsory, leaving to the candidate a certain amount of choice. They have had considerable difficulty in deciding the nature of the choice which should be allowed, but have finally come to the conclusion that all candidates should be compelled to take up English, mathematics and a modern language, but that each candidate should be permitted to choose between Latin and experimental science."

"The Committee are of opinion that those candidates who succeed in qualifying, as explained in appendix A,* in the four compulsory subjects, may be regarded as having received a sound general education, and as being in every way fitted, so far as their general education is concerned, to receive commissions in His Majesty's Army."

"So far only those subjects have been dealt with which may be regarded as forming the staple of a good general education, the minimum, in fact, which all candidates for commissions in the Army should be required to study. In a competitive examination, however, it is not advisable to restrict the subjects of examination within too narrow limits. The Committee, therefore, wish to place certain subjects in a second or voluntary class."

"The voluntary subjects which the Committee would recommend, in addition to those named above in the compulsory class, are as follows: Higher mathematics and Greek.

The examination in higher mathematics should be divided into two parts, Part I. and Part II.; both of these may be taken up by candidates for Woolwich, who must in any case qualify in Part I.

Further, any candidate may take up as his voluntary subject any subject which he did not take up in the compulsory class. Thus, if he took Latin as a compulsory subject, he may take a science as a voluntary subject, and *vice versa*; or, if he took French as his compulsory modern language, he may take German as a voluntary subject, and *vice versa*."

"The Committee further considered whether General European History should be made a voluntary subject, but since much of European History is involved in the proposed examinations in English, French and German, as well as for the general reasons given, they decided in the negative. The same considerations

* See page 16

have led them to exclude branches of science other than physics and chemistry, and modern languages other than French and German."

"Facility in drawing, both freehand and geometrical, is of great value to the officer, to whatever branch of the service he may happen to belong. It is indeed essential that all army candidates should be well grounded in geometrical drawing, and with the object of securing this result the Committee have included geometrical drawing in the compulsory mathematics." * * *

"Freehand drawing stands on a somewhat different footing. While it is desirable that all officers should have a certain facility with the pencil, yet many young men who would make excellent officers can never hope to be able to learn to draw in the time available. The subject is therefore placed by itself; this will permit those candidates who can draw to reap a certain amount of benefit from their accomplishments, and at the same time, by limiting the number of marks which may be scored, will guard against the possibility of candidates unable to draw being too severely handicapped in the competition."

"SYNOPSIS OF APPENDIX A."

"Proposed Examinations for Entrance to the Royal Military Academy at Woolwich and the Royal Military College at Sandhurst, and for the Literary Qualifications of Militia and Yeomanry Candidates.

English. The kind of examination which the Committee wish to see carried out is one which should, in the first instance, test the power of the candidate to express himself correctly and effectively in his own language. This undoubtedly will best be done, not by setting grammatical and philological questions, but by requiring the candidate to write essays and *précis*. It is also clear that the test will lose its value unless care be taken that a sufficient variety of subject-matter is provided in the questions set."

"In the second place, the examination should test the knowledge of a candidate in respect to the main outlines of English history, meaning by history, not merely the record of political events and changes, and of wars, but also the story of the social and intellectual development of the nation. The Committee also recommend that while part of the examination in this subject should deal, in a general manner, with the outlines of English history as a whole, another part should deal in greater detail with the history of the British Empire from about 1760 A.D."

"The Committee are further of opinion that the questions should test the candidate's general knowledge of the geography of the British Empire, as well as his general acquaintance with its products and exports."

"Lastly, not only in the examination in English, but in all parts of the examination, marks should be deducted for bad spelling and bad grammar, and the number of marks so deducted should in each case be made known."

Mathematics. The mathematics called for under the head of Class I. comprise a knowledge of arithmetic, including the use of logarithms, of elementary geometry and geometrical drawing; of algebra as far as and including quadratic equations, indices, and surds; the elements of plane trigonometry, and elementary mechanics.

The mathematics included in Class II. require a more advanced knowledge of the mathematical subjects named in Class I., together with a knowledge of conic sections, the elements of calculus and of statics and dynamics.

"Modern Languages. The examinations in modern languages should be conducted on similar lines to those recommended for English, no grammar questions being set. The candidates should be tested in colloquial knowledge, and in writing from dictation. The colloquial examination should be carried out by not less than two examiners, and should take a more serious form than a mere conversation on trivial subjects."

"Ancient Languages. In the examination in Latin and Greek, passages selected from the authors usually read in schools should be set for translation into Latin or Greek prose. Questions should also be set to ascertain whether the candidates possess such an elementary acquaintance with the History and Geography of Ancient Rome or Greece as is required for the intelligent study of the books they have read."

"Experimental Science. In the Pass Part of each of the experimental sciences the knowledge required should be elementary, and such as only could be gained by working in a laboratory, the instruction given being in the main oral instruction in connection with the observations and experiments, formal lectures being made use of only to co-ordinate and consolidate the knowledge gained by the laboratory work. By a laboratory, to be used for this part of the examination, is meant an 'Elementary' laboratory, that is one with a plain, simple, inexpensive equipment.

"The examination should be partly practical and partly by means of questions to be answered in writing. The number of marks allotted to the practical part should certainly not be less than the number allotted to the other part; it might with benefit be greater.

"In the class part of each science the examination should be partly a written and partly a practical one, but a larger proportion than in the pass part, say about six-tenths, should be assigned to the written parts. The practical part should be of such a character that it could be conducted in a laboratory of very moderate equipment, the only apparatus or instruments needed being those of a well-known and relatively simple kind."

The details of the examination called for in physics and chemistry show that the candidate will be required to have an excellent working elementary knowledge of the two sciences, including electricity and magnetism.

In the United States, officers are commissioned from one of three sources. 1. Graduates of the United States Military Academy, 2—the ranks of the army, 3—civil life; appointments from the second and third classes being made in succession after candidates from each preceding class have been provided for.

"Each Congressional District and Territory*—also the District of Columbia—is entitled to have one Cadet at the Military Academy. Each State is also entitled to have two cadets from the State at large, and forty are appointed from the United States at large. The appointment from a Congressional District is made upon the recommendation of the Congressman from that District, and those from a State at large upon the recommendation of the Senators of that State. Similarly the appointment from a Territory is made upon the recommendation of the Delegate in Congress. Each person appointed must be an actual resident of the State, District, or Territory from which the appointment is made. The appointments from the United States at large and from the District of Columbia are made by the President of the United States upon his own selection.

"After appointment the candidates must satisfy the Academic Board that they possess the mental and physical qualifications required by law."

Candidates for the Military Academy are required to be well versed in reading, writing, spelling, English grammar, English composition, English literature, arithmetic, algebra through quadratic equations, plain geometry, descriptive geography and the elements of physical geography, especially the geography of the United States, United States history, the outlines of general history, and the general principles of physiology and hygiene.

In lieu of a regular mental entrance examination the Academic Board may accept, 1—Papers from a competitive examining board covering these subjects; 2—Certificate of graduation from a public high school, the studies of which covered the required course; 3—Certificate that the candidate is a regular student of any incorporated college or university.

A rigid physical examination is also made.

Candidates must be between the ages of 17 and 22

Candidates for commissions from the Army must be unmarried, under thirty years of age, citizens of the United States, physically sound, must have served not less than two years in the army, and have borne a good moral character before and after enlistment.

Each candidate is required to pass a preliminary examination before a board of officers convened by his Department

* Official Register U. S. M. A., 1902.

Commander, in which a rigid inquiry is made into his character, capacity, record and qualifications. His military record will be closely examined and his antecedents before entering the service will be made the subject of a special inquiry. He must also pass a rigid physical examination. The preliminary examination embraces the following subjects:

1. English grammar, including orthography, reading, and writing from oral dictation.
2. Mathematics, including arithmetic, algebra, to include the solution of equations of the first degree containing one unknown quantity, the use of logarithms, the elements of plane geometry, plane trigonometry, and surveying.
3. Geography, particularly in reference to the United States and North America.
4. The outlines of general history, and particularly the history of the United States.
5. The constitution of the United States and the organization of the Government under it, and the elements of international law.
6. Army regulations, and the drill regulations of the arm from which he is selected. The examinations in drill regulations will be practical, extending through the schools of the soldier, squad, and platoon, and shall take place on the parade ground in the presence of the board.
7. The military record of the candidates as certified to by their company, post and regimental commanders.
8. Physical aptitude, as determined by the medical examination; proficiency in athletics, skill in field sports, etc.
9. Moral character and civil record as verified by the investigations of the board.

In awarding marks the board will give to each subject in the examination the relative weight given in the following example. The weight to be given to each question will be determined by its importance, and will be set opposite the question in the papers furnished the candidates.

EXAMPLE.

| | |
|---|-----|
| 1. English grammar, orthography, etc..... | 100 |
| 2. Mathematics | 200 |
| 3. Geography | 100 |
| 4. History | 100 |
| 5. Constitution and international law | 100 |
| 6. Army and drill regulations and military capacity and aptitude as determined therefrom... | 200 |
| 7. Military record | 100 |
| 8. Physique | 100 |
| 9. Moral character and antecedents .. | 200 |

1200

These examination papers having been submitted to the Adjutant General of the Army, successful candidates are sent before a general Board of five officers, which meets at Fort Leavenworth Sept. 1 of each year for a final competitive examination covering the same ground as the Departmental examination. To pass this examination an average of at least 65% of the total marks in each subject and a general average of at least 70% must have been attained. Soldiers who successfully pass this examination have the title of Candidate prefixed to that of their rank on all official papers, and are given commissions as vacancies occur.

A candidate from civil life must be between the ages of 21 and 27, must be a citizen of the United States, unmarried, physically, mentally and morally qualified, and must have a letter from the War Department authorizing his examination. If a graduate of an institution where he received military instruction, he must present a diploma or a recommendation from the faculty thereof; if a member of the National Guard, a recommendation from the proper National Guard authorities. Examinations are conducted by a board appointed by the Secretary of War, consisting of five commissioned officers, two of whom are medical officers, the duties of the medical officers being restricted to the physical qualifications.

Having passed a rigid physical examination the candidate is examined in the subjects prescribed for candidates from the ranks of the Army, omitting military subjects. The candidates are marked and rated. Appointments are then made by the President.

THE INTERMEDIATE EDUCATION OF ARMY CANDIDATES.

There is some difficulty in determining the dividing line between the antecedent and intermediate stages of preparation, but it may be placed at the point where the candidate begins to learn the technical part of his chosen profession.

In the German cadet schools this is when entrance is made into the upper Cadet schools, after the five years' course of the preparatory schools has been completed. The final examinations of the latter comprise, religion; German prose and poetry, versification, arrangement of sentences; Latin—through Books I and V of *De Bello Gallico*; French—Grammar, reading and conversation; English—grammar, reading and conversation; mathematics—geometry, higher arithmetic,

and algebra through solution of equations of the first degree; history—history of Middle Ages up to 1648; geography—geography of Europe, especially of Central Europe, the atmosphere, land, seas, inland waters; physics—general properties of bodies, solid, liquid and gaseous, elements of heat and chemistry, chemical union and combustion; topographical and mathematical drawing—elements of projections and perspective, scales and conventional signs, etc., with an optional course in free-hand drawing and writing.

The upper Cadet schools have a four years course covering the subjects of the lower grades, with the addition of physics, chemistry and topographical drawing, army regulations, riding and practical military exercises.

After passing successfully through two years of this course, a Cadet is admitted to the ensign's examination. Those cadets who are of proper age and physique and who pass this examination successfully are (a) recommended for appointment in the army as brevet ensigns, or (b) are transferred to another class (*selecta*) to prepare directly for the officer's examination, or (c) are transferred to the next higher class of the school.

The course of the *selecta* class corresponds closely to that of the War schools, and consists entirely of military studies and of modern languages. *Selecta* cadets are the only persons who receive commissions direct and without receiving the formal approval of the officers of the organization they aspire to join. All other candidates must first pass through the grade of Ensign. Cadets appointed brevet ensigns are sent to regiments to serve for five months, during which each must so comport himself as to receive the approval of the officers attached to his command as a future associate. Without such an approval he cannot enter the command and may only try his fortune again with some other. If all is satisfactory the full grade of ensign is given, and he is sent to a War School for a nine or ten months' course. This being passed, he is admitted to an examination as officer, and if he passes is nominated to the Emperor for appointment as second lieutenant.

The classes of the last two years of the Cadet schools are made up of cadets who have been successful in the earlier years, but who have not yet attained the requisite age or physique, or whose parents request the continuation of the

studies at the school. At the end of the first year successful cadets may be appointed brevet or actual ensigns, or they may be transferred to the highest class for preparation for the Abiturienten examination (the diplomas granted showing fitness for entrance into a University), or they may be transferred to the *selecta*. After passing the Abiturienten examination cadets are appointed ensigns and sent to a War School for the final course before being commissioned.

In reporting on the Cadet School near Potsdam, General Ludlow states:

"The cadets are working unceasingly; attend chapel at 5 A.M., have breakfast, an interval, follow their studies until 11 A.M., when a sandwich or other light refreshment is provided, return to recitations, dine, have an hour's drill in the parade, go to the gymnasium for an hour's exercise, resume their recitations in the afternoon, with battalion exercise in addition, have supper at 5.30, study during the evening in their quarters, and have taps at 10 o'clock. It was stated that in ten years there had been no cadet out of his quarters at night—a fact speaking equally well for the discipline of the institution and the natural good conduct of the cadets.

* * * * *

"The healthy condition of these boys and their bright and alert appearance were noticeable. It was noticeable here, as in the recitation rooms, with how much familiarity the officers treated the cadets. This is probably possible because of the inherent respect of the German for all authority.

"The numerous lecture rooms on the first floor have accommodations for classes of 40 or 50, where oral and black-board instruction is given and recitations are made. Two of these were attended. In one a civilian professor of English was holding his English class, and incidentally teaching the geography of Germany. A map of Germany hung on the wall. Several cadets were called up, asked to state their home province, and then proceeded to bound it, giving its natural features, rivers, principal towns, institutions, etc.—all this done in English, the combination of the two instructions being at once advantageous and practical. Another class in English and French under the direction of an officer was attended. The class was divided, about one-third of them studying English and Russian, the other two-thirds English and French. The Russian

recitation was not heard. In the English and French the cadets read from a French book and translated into English, giving an account of Berlin, its various architectural features, monuments, libraries, museums, etc."

The programmes of instruction at the War Schools will be given later.

To obtain a commission without passing through the Cadet schools, a candidate from civil life must present an abiturienten diploma (from one of the gymnasia) or must pass a corresponding examination which demonstrates a sound knowledge of German and of German literature, an ability to read Latin and French, and a good knowledge of ordinary mathematics, geography, history and drawing. He is then entered into one of the regiments as an aspirant officer (*Fahnenjunker*) and serves in the ranks for not less than five months. After such service, if he obtains a favorable report from the officers of his command, and approval as their future associate, he is warranted as an ensign and sent to one of the War Schools, as in the case of a cadet.

French officers of Artillery and Engineers receive their intermediate training at the *Ecole Polytechnique*, or at the *Ecole Militaire* of Versailles, of Infantry and Cavalry at St. Cyr or at the *Ecole Militaire* at St. Maixent. The courses at the *Ecole Polytechnique* and St. Cyr last two years. That of the former comprises instruction in the higher branches of mathematics, analysis, mechanics and machines, descriptive geometry and stone cutting, physics, chemistry, astronomy, architecture, history and literature, free hand and mechanical drawing and German. There is also a department of military instruction.

The standing of each cadet is published twice per year. At the end of each year the relative order of merit is fixed for each class. The average results of the final examinations of both years fix the order of merit of the graduating class. Graduates into the artillery and engineers are sent to take a two-years' post-graduate course as student second lieutenants at the school of application for Artillery and Engineers at Fontainebleau.

The course at St. Cyr. includes instruction in artillery, topography, military art and history, military legislation and administration, fortification, musketry, geography and statistics, military literature and drawing—also practical and

theoretical instruction in infantry and cavalry exercises, gymnastics, fencing and riding. Examinations are held annually, and cadets are rated as at the Ecole Polytechnique. After the Easter examination of the first year the aspirants for commissions in the Cavalry are selected, and thereafter receive special instruction to fit them for their arm.

The school text books are as a general rule written or compiled by the instructors and are rewritten as often as is necessary to keep pace with military progress. They are generally lithographed from the mss. and a very small edition published.

After graduation cavalry lieutenants are sent to the Ecole d'Application at Saumer for an eleven months course.

Meritorious non-commissioned officers of the Army of two-years' service who desire commissions are sent to the military school of Versailles for Artillery and Engineers, and to that of St. Maixent for Infantry and Cavalry. The course at each is one year, and the entrance is by competitive examination.

In the British service the only intermediate training, strictly so-called, is given in the two Royal Military Schools and at the Royal Military College at Kingston, Ontario, from which a few officers are commissioned annually. Candidates from the Militia necessarily have received some training, but it is only incidental and not as a direct means of preparation for a commission. The Parliamentary Committee recommends that a course of military instruction be given in future at the Universities for the training of candidates from these sources.

They are convinced of the necessity for retaining the Royal Military Colleges, and recommend that the instruction given in them be confined to technical and professional subjects, under the assumption that cadets may be supposed to have completed their general education before entrance. The management of the Royal Military Academy at Woolwich is commended.

Candidates for that institution must be between the ages of 16 and 18, unmarried, and in all respects suitable in the opinion of the Commander-in-Chief, to hold a commission in the Army. Cadetships, varying in number with the requirements of the service, are granted as a result of semi-annual

competitive examinations held in London under the Civil Service Commission. The examinations are physical and mental. Cadets are required to pay a certain sum annually, varying from £150 for the son of a private gentleman to nothing for a King's Cadet (appointed from sons of men who have died in the service), according to the status of his parents, and excepting a King's Cadet, £35 on entrance, for uniform, books, etc.

Each cadet is allowed 3s. per day for messing, washing, uniforms, etc. All expenses beyond this must be paid by his parents.

The course is of four terms covering two years, the cadets entering at each semi-annual examination being termed a class. The course of study is partly obligatory and partly voluntary, but the higher or voluntary studies cannot be taken up unless the cadet is reported as practically certain to qualify in the ordinary obligatory sections of the subject, and is far enough advanced to profit by the instruction in the higher branches. In choosing between French and German, the choice must be that in which he has such proficiency as to profit by the advanced instruction given to the class.

"To qualify for a commission a cadet must be in the 4th (highest) class, and must obtain at the final examination the qualifying minimum of marks in the obligatory sections of each subject, and .5 of the total number of marks allotted to the obligatory course of that class. He must also obtain .5 of the sum of the marks allotted to the whole of the obligatory course of the 1st, 2d, 3rd and 4th classes."

The order of precedence for promotion from each lower to each higher class is determined from the aggregate of marks gained for the entire course of that class. For a commission the order is determined upon the aggregate of marks gained for the entire course of four classes.

The course includes Mathematics, Artillery, Fortification, Military Engineering, Practical Geometry, Military Topography, Tactics, Freehand Drawing, French, German, Chemistry and Physics, Electricity and Magnetism, Riding, Gymnastics, Infantry Drill, Revolver Practice, Swimming and Wood and Metal Shop Work.

The mathematics include Algebra, Trigonometry and mensuration, mechanics, Analytical Geometry and Differential and Integral Calculus.

"Practical Geometry" is known in the United States as descriptive geometry.

"Artillery" includes ordnance and gunnery and mechanism.

"Tactics" includes also strategy and military administration.

The French and German instruction is in translation and conversation.

The chemistry and physics course is quite elementary and is confined mainly to military applications.

The course in electricity and magnetism is also elementary.

The Committee recommends certain minor general changes in the course with a view to making it more practical. They commend the system of giving to those cadets who have made the highest totals of marks in the four examinations held during their stay at the Academy the first choice of commissions in the Royal Engineers, as an excellent one, in providing an incentive to continued application.

☐ The admissions to the Royal Military College at Sandhurst, from which graduates are commissioned to the Cavalry and Infantry, are made in the same manner as to the Woolwich Academy. The course is now being completely remodeled and no detailed description is possible.

As a result of their investigations into the preliminary and intermediate education of officers, the following important recommendation is made:

"Finally, the Committee recommend that all cadets passing out of Woolwich and Sandhurst, and all Militia, Yeomanry, and University candidates who succeed in obtaining commissions in the Regular Army, should receive, in the first place, "probationary" commissions as second lieutenants, being shown as such in the Army List. Further, that these officers should not be confirmed in their commissions till they are reported to be in every way fit, which report should be made by the three senior officers of the regiment or battalion after the young officer has held his probationary commission for two years."

Of officers entering the United States Army only those who graduate from the Military Academy at West Point have received a systematic intermediate training. Men promoted

from the ranks have received some training, but only such as is given to enlisted men in general. No special training is given to aspirant officers in the ranks, and from the syllabus of the examinations for commissions already given, it can be seen that no inducement is given to the aspirant officer in the ranks to do more than to perfect himself in the requirements of the very limited general education prescribed, and to perform his duties faithfully as an enlisted man intelligent enough to be a non-commissioned officer.

A certain amount of assistance is given by the United States to private and state institutions of learning which have a prescribed military course in their curricula, but graduates of these institutions are on the same plane as other candidates from civil life, and the relative standing of such a graduate candidate is not increased by his knowledge of military affairs. The same holds true in the case of a candidate from the National Guard. In fact a National Guardsman, or such a graduate, who for any reason might be in bad standing with his superiors (who are not United States officials), would be in worse case than a candidate with no knowledge whatever of military affairs, and of whose past there is no official knowledge.

The United States Military Academy is in many respects a model school, second to none in the world, and its graduates have added many honorable pages to the history of the country in its military and civil records.

Candidates are admitted to the Military Academy as previously described. After admission each receives a warrant from the Secretary of War as cadet, a definite rank in the army just below that of veterinarian, the highest non-commissioned grade. His pay is \$609.50 per annum, out of which must come all of his living expenses, cost of uniforms, books, &c.

The cadets are arranged in four classes corresponding with the four years of study, named in order of rank, first, second, third and fourth.

For instruction in infantry tactics and in military police and discipline the cadets are organized into a battalion of six companies under the Commandant of Cadets, an officer of the Army, with an officer in direct command of each company. Each company has its due proportion of cadets of each class, and its regular complement of cadet officers and

non-commissioned officers. In general cadet officers are appointed from the first class, cadet sergeants from the second, cadet corporals from the third. These cadet officers and non-commissioned officers are held responsible for discipline in barracks and ranks.

There are ten academic departments under the charge of six permanent professors and one detailed professor (from the Army), the Commandant of Cadets and two detailed instructors. The heads of departments are assisted by one assistant professor and a varying number of instructors detailed from the commissioned strength of the army. In 1902 these numbered sixty.

The curriculum as now established is as follows:

| *DEPARTMENTS | SUBJECTS EMBRACED. |
|---|--|
| 1. Mathematics..... | Algebra, geometry, trigonometry, analytical geometry, descriptive geometry, differential and integral calculus, method of least squares. |
| 2. Natural and experimental philosophy..... | Analytical mechanics (solids and fluids), wave motion (acoustics and optics), astronomy (general and practical). |
| 3. Drawing..... | Geometrical, topographical, reconnaissance, (field and office work), freehand drawing, technical (architectural, mechanical, professional-military). |
| 4. Chemistry, mineralogy and geology..... | Heat chemistry, physiology and hygiene, electricity and magnetism, mineralogy, geology. |
| 5. Tactics..... | Drill regulations (theoretical, infantry, artillery, cavalry), practical drills (all arms of service), tactical problems, with field exercises, service of security and information, company and staff administration, guard duty, military and camp police, stable management and care of animals, requirements of field service, customs of service, castrametation, army transportation, packing, etc.† |
| 6. Modern Languages.... | English, French, Spanish. |
| 7. History and law..... | Elementary law, constitutional law, military law, international law, general history (ancient and mediaeval, and modern) historical geography. |
| 8. Military and civil engineering..... | Civil engineering, military engineering (field and permanent fortifications), art of war, campaigns, etc. |
| 9. Practical military engineering..... | Including military signaling, surveying, bridge-construction, and over forty different operations. |

*Report of Superintendent, U. S. Military Academy, 1902.

†Gymnastic exercises, fencing, swimming and riding are also included.

10. Ordnance and gunnery. A general survey of all that science pertaining to military service, with special consideration to our own service.
11. Course in military hygiene.

The course is of four years, and practically the entire time of the cadets is devoted to duty as shown in the following table:

EMPLOYMENT OF TIME IN FOUR YEARS' COURSE.

| *Department. | Relative amount of time occupied. | Department | Relative amount of time occupied. |
|---------------------------|-----------------------------------|----------------------------|-----------------------------------|
| Tactics..... | a 2850. | Practical Engineering..... | 100. |
| Mathematics..... | 1800. | Military Hygiene..... | 25. |
| Modern languages..... | 1400. | Sleep..... | 11000. |
| Engineering..... | 1000. | Recreation..... | 9025. |
| Philosophy..... | 950. | Meals..... | 2775. |
| Chemistry..... | 650. | Furloughs..... | 1850. |
| Law and history..... | 550. | Chapel..... | 250. |
| Drawing..... | 475. | | |
| Ordnance and gunnery..... | 300. | Total..... | 35000. |

a 650, theoretical; 2200, practical.

The training given at the Military Academy is very thorough, rendered possible by the large number of instructors. Each class is divided in each subject into sections of about 12 cadets, for recitation and instruction. In this way the progress of each cadet is tested daily. The cadets hold their places in the sections by their proficiency, transfers being made at weekly intervals when desirable. In the more difficult subjects the higher sections cover the course more thoroughly than the lower. The cadets in any one section being about equally proficient, the maximum progress can be made by the section.

The order of choice of arms of the service among vacancies existing on graduation being fixed by the class standing, a great inducement is offered for hard work. Competition for standing among the cadets is continuous for the four years, and it would be difficult to devise a more severe physical and mental test than is given by the West Point course.

The time-honored policy of the Academy has been so to shape the course as best to fit the graduates for the work of commissioned officers of the Army. Its aims then are different from those of an ordinary institution of learning, and

*Report of Superintendent, U. S. Military Academy, 1902.

measures which might be unwise in institutions of the latter class become imperatively necessary there. The acquisition of knowledge is held to be distinctly secondary to mental and moral training. When a task is assigned, it is regarded as a specific duty to be performed, exactly as given; that being done, work on original or outside lines is welcomed—otherwise not. Performance of duty is inculcated as the primary principle of the soldier's life. To this a high standard of honor is a necessary corollary.

The application in instruction, of the principle that the learning of a prescribed lesson is the proof of the accomplishment of the duty, limits the first duty of the instructor to the hearing of recitations, and makes his secondary duty that of instruction, and without doubt detracts in a measure from the amount of absolute knowledge which a dull mind can get from the course. With carefully selected textbooks, however, this defect is confined to small limits, and the net gain to the Army in mental and moral training given to its future officers has seemed to much more than make up for a slightly more limited fund of information. West Point does not so much "educate" as "train." The broader knowledge required for an educated man must be, and as a rule is, acquired before entering the academy and after graduation.

In the rigorous work of the Academy the mentally and physically weak and those in whom analytical and reasoning powers are defective are rejected and dropped from the classes. On graduation a class may be considered as representative of those of the youth of the entire country whose talents fit them for the soldier's life. Men rejected from the Academy may and frequently do achieve marked success in civil pursuits, but the history of the wars of the nation shows that West Point's training and selection have been a good criterion for the selection of the best class of men for the officers of the American Army.

The training and classification at the Academy having been mainly on mathematical lines, the Academic authorities have logically, as is the practice in foreign armies, recommended the graduate cadets, in their order of graduation standing, for commissions in the Engineers, Ordnance, Artillery and Cavalry and Infantry.

From the foregoing it is seen that England, Germany and France require practically the same standard of general edu-

cation for the men who are to be commissioned officers in the respective armies, and that this standard is practically as high as it can be placed for youths of 19—that the Germans are the most thorough, and place a higher value on the languages than do the French, who in turn demand more in the mathematical subjects.

The demands of the United States are much lower, excepting from the men trained in the Military Academy. Here is an anomaly which no doubt exists largely as a matter of tradition, dating from the days of less widely spread educational facilities. The curriculum of the Military Academy shows what is officially deemed necessary. Those acquainted with that institution can say further that the extremely moderate standard of its entrance examination is by no means a measure of the education which probably a majority of the candidates have received, and that long after graduation, the influence and results of the better earlier training are distinguishable. This is to be noted, inasmuch as a knowledge of Latin or of any tongue other than English is not required of the Military Academy candidates, and it might appear that the graduate officers of the United States Army have attained their standard of education without the training given by the study of languages other than that received in the West Point course. In fact, in the few classes at the Academy which the writer knew intimately, a general training in a so-called "classical course" received prior to entry into the Military Academy, seemed to be the best possible preparation for the severe competition of West Point, and the writer's personal experience at the Academy and in subsequent professional work is altogether in accord with the English Committee's recommendations and the German practice as to the helpfulness of a study of Latin.

As already noted, the standard of education required for men appointed to commissions in the United States Army from the ranks and from civil life is distinctly low—lower than the general education of the youth of the country warrants. With this low standard, the graduates of the higher Civil Academies or of the Colleges of the Union have no better chance for commissions than have men whose education is limited strictly to the requirements. Does this policy provide as well educated a class of men as the country has a right to demand? In war time, young men in the ranks

can show exceptional qualifications for a commission, which qualifications, however, if unaccompanied by education, may fit them for the lower commissioned grades, but will not enable them to fill advantageously the higher grades to which if they live long enough they will necessarily attain, under the present system. In time of peace, even these tests are wanting. The supply of officers will always be equal to the demand, and if the regulations demand a high standard of general education from aspirant officers, that demand will be met.

Although the schools of Germany are second to none in the world, the Empire finds it profitable to have state-aided schools for the training of boys—schools over which the Emperor himself exercises a careful supervision, and the graduates of which have the first chance for commissions. Aspirant officers from the ranks must also pass the official examination necessary for entry into a University. France has her official examinations for her state-aided schools, open to all French boys. England has the same, though the numbers admitted are more limited. In the United States alone, excepting for promotions from the ranks of the Army, merit and a love of a soldier's work must have joined to them certain influence to permit a boy to become an officer. Some members of Congress, by choice, make their appointments to West Point, as a result of open competitions, but this is not obligatory. In the United States Civil Service, merit now has the protection of the law when seeking admission. Is not the service to which the Army is pledged, the maintenance of the nation's life, equally important? Should not this service be open to the country's best?

The position taken by the Parliamentary Committee is the only one logically tenable, that one minimum standard of general education should be required of all officers, no matter by what path the service is entered. This standard can be enforced by official examinations, which when passed shall declare eligibility, to that extent, to the higher offices of the government service, civil as well as military. In a short time educational institutions would work toward that standard in their curricula, and the supply would be provided, even without state-aided schools.

The United States can then send a portion of its supply to its Military Academy for the special training there. An-

other portion would enter the ranks of the Army as aspirant officers, and for them another special training can and should be given. Still another can enter the National Guard, and there in a measure prepare itself in military knowledge, while at the same time rendering good service to the state.

Inasmuch as legislation would be required to carry out this recommendation, and early action is desirable, a step in the right direction can be taken by raising the general educational standard in the examinations for a commission from the ranks and from civil life; by giving a definite degree of credit in these examinations for knowledge of subjects, general and technical, of value to an officer which are not made obligatory in the examinations; by opening examinations from civil life to competition for all young men possessing certain requirements and making them truly competitive, with the certainty that the appointments will be given according to the findings of the Board of Examiners; and finally by giving a special training to aspirant officers in the ranks who have passed a preliminary test.*

Lastly, it must be admitted that with the best general education all men are not fitted for command, or for the soldier's profession. Whether a man possesses the combination of mental and physical qualities which fits him naturally as a leader of men, cannot be determined from any form of examination yet devised. Even West Point at times graduates men who as officers are a failure. An actual trial in practical work in the arm of the service to which the candidate aspires is necessary. For this reason the German practice and the English recommendation of a probationary period, before a life commission is given, is absolutely necessary if the country is to obtain what is required—the best.

* During the past summer a step in this direction was taken by assembling all candidates from the ranks who had passed the preliminary Departmental examinations at Fort Leavenworth in June, and giving them there further training in the subjects covered by the program of examination for September. To this were added a few lectures on the customs of the service. While this course benefitted the individual men and gave a more equal chance of passing to all, it did not provide any advanced education or military training.

THE LACK OF SMALL ARM EXPERTS AND OF INTEREST IN THE RIFLE.

BY CAPTAIN THEODORE H. LOW, U. S. MARINE CORPS.



Service journal, some time ago, complained bitterly because a National Guardsman had written advocating an increase in the annual allowance of ammunition for target practice. If this fierce opposition reflected to any extent the sentiment of the services which the paper claims to represent, it would show a strange lack of interest in that important requisite of military life—skill with the rifle. Granting that these views of the paper show some apathy in this respect, one of its causes would lie in the lack of the so-called “small arm expert” among company officers. The dearth of these is so great that when any new one is discovered, he is usually assigned to some special detail, leaving few, if any, of such “experts” for company training, and rendering these so much in the minority that they are powerless to change the opinions or standards of the services at large, thus even making possible, in certain quarters, a prejudice against this so-called “expert” knowledge.

It may be as well to explain that the word “expert” as here used designates not necessarily those officers who are themselves crack shots, but those who possess the requisite knowledge of the rifle to enable them to train others to become “crack shots,” in the minimum of time and effort. The writer will endeavor to show that in this narrow sense, the word should be capable of being applied to all officers alike, as it is one of an officer’s first duties to be able to teach and train his men to shoot accurately and rapidly, and this knowledge, so necessary to all officers, should no more entitle anyone to the name of “expert” than does a knowledge of the manual of arms, or a knowledge of steam on the part of a mechanical engineer. With this change of standard, requiring from all officers the knowledge now possessed only by the so-called “experts,” this loose use of the word would be clearly impossible. However, for the sake of convenience, the word “expert”

is retained as including all those officers who have more special knowledge of small arms than is demanded by present standards.

To return to the far-reaching effects of this dearth of experts, it is well known that lack of knowledge and lack of interest go hand in hand as surely as that enthusiasm and zeal follow in the trail of that knowledge which alone produces skill. Interest itself is so largely dependent on the pleasure derived from superior knowledge, and from gratification over increased skill displayed, that the mediocre workman fails to find any enjoyment or interest in his work. This is as true in musketry as in everything else. Moreover, in the case of those officers doing duty with their companies, their feelings, their desires are those of the company, and, are, therefore, of the utmost importance. Interest and enthusiasm, caught by the officers, quickly spread throughout the entire company, while, on the other hand, the pupil, the private, cannot be wiser or keener than his master, the officer. He can but follow where his captain leads, hence the necessity of the leaders having that knowledge of the rifle which is at present called "expert" knowledge, together with that enthusiasm so surely resulting. By as much as the so-styled "experts" among the company officers are increased, by just so much is zeal and enthusiasm, with resulting knowledge and skill, augmented in the company. Two instances, noticed recently, show this clearly. One officer, fortunately as young as he was ignorant, being compelled one day to take his company out to the range, attempted to fire the rifle himself, and in his endeavor to set the men a good example, knocked out a tooth. Ever after it was said to be as hard as pulling teeth to get him to attempt any small arm instruction, and simply impossible to overcome his apathy and lack of interest, which, spreading through the company, rendered its range work utterly worthless. The other officer, with some knowledge of the rifle, went so far as to devise some special variations—improvements he thought them—on the ordinary system of preliminary drills. While in reality his new ideas were quite valueless, yet his zeal and enthusiasm called forth the best efforts and energies of the company, each man doing his best, with a result that the records were wonderfully good, rather, however, in spite of the system than, as the officer claimed, because of it.

At present, owing largely to the difficulties to be met and the obstacles to be overcome, on the road to this expert or

superior knowledge, there is a disposition shown not to expect such knowledge of an officer, much less to demand it of him. Thus this scarcity of experts is due almost altogether to lack of opportunity, and no officer can be blamed, perhaps, for not being up in his profession. As matters stand at present, from time to time certain officers are dubbed as experts in their profession of small arms, and other officers are taught to regard the knowledge of these few experts as something phenomenal and mysterious; something gained only after years of laborious research through many books, combined with rare special details, giving golden opportunities for practical work with the rifle. Other officers, desirous of reaching this proud pinnacle, in default of any school for musketry instruction, of any valuable authoritative exhaustive work on small arms, or of any lucky detail, taking them outside of the ordinary post duties, have no chance of reaching this coveted goal of expertness in their profession. To be sure there are always open to them the columns of the sporting papers, or the information obtainable at small arm factories, but, without a special detail as ordnance inspector, neither proves satisfactory to officers.

Nevertheless, skill in musketry is the most essential characteristic of the modern soldier, and the capability of training to the fullest development this skill, without waste of time or energy, is equally the foremost requisite of an officer. Special knowledge and training are demanded of even the poorest of lower-grade schoolmarms, before being allowed to teach young children their three R's. Surely the training of men to be soldiers—to "shoot"—demands the best efforts of clear-minded experienced officers, with exhaustive knowledge of the rifle, its possibilities and limitations. No knowledge, no training, is second to it, no duty more exacting nor yielding greater returns. As surely is superior knowledge—"expert" knowledge of firearms, we may choose to call it—required for an officer to be in proper position to develop to the fullest extent the latent possibilities for skill with the rifle of every man in his company; to rouse by his own interest and zeal those of his men, and to direct the energies of all to training their abilities to the highest point of skill in rifle shooting.

There would seem to be no more inherent difficulty in acquiring this "expert" knowledge in the sense here used, than in acquiring any other specialty; and certainly no greater knowledge would be required. With the general increase in knowl-

edge and education, while priding ourselves on the superior intelligence of our officers and men, it surely should be possible to raise the general requirements of all officers as to knowledge of musketry from the present low level. Let this standard of special "expert" knowledge be made as easy as possible of attainment, and let all officers be given the chance to perfect themselves in the knowledge of their weapon, the rifle, and of the methods of training to acquire skill with it, and then let them be held responsible for lack of such special knowledge, rather than praised for possessing it; have such requirements for the minimum, that all officers will be obliged to gain that knowledge of the rifle essential to properly train men to shoot. Officers then, with their comprehensive knowledge of the rifle, would be able to explain clearly and interestingly to their companies the hundred and one questions continually arising in the minds of intelligent American soldiers in regard to their rifles. Such questions could be answered as why the pull, sight, and rifling of a military rifle are made as they are; what affects the penetration and how it varies with range and material; what errors in estimating distances can be made at the different ranges, and still the fire, if free from other error, continue to be effective. The soldier, as well as the officer, would know how the recoil of a rifle might affect the accuracy of fire; why pulling the trigger should cause the bullet to strike the mark, or, if it misses, what is probably the nature of the error. In short, all officers should know much if not all about ammunition, rifles and trajectories, not only of their own companies but of their possible opponents as well.

This special knowledge and study of the rifle by all the officers would insure that the ammunition expended in rifle practice was used to the very best advantage, and an officer would not have such limited knowledge, that, in range work, his guidance would be confined to telling the firer to aim more to the right or higher, according as a shot falls to the left or low. Even if this advice should happen to be sound, the chances are that the American soldier has enough common sense to make it unnecessary.

It may truly be said that good shooting only comes with long practice, and that good officers do not have to be book worms. At the same time, to insure the best results, the greatest possible benefit must be derived from every shot fired. Each round expended must carry its lesson. The old-fashioned

natural farm-boy process of learning to shoot by continual experiment in the long, laborious school of trial and error was even slower than it was sure. Then, as in animal progression, progress to good shooting could only come after the lapse of time by the survival of the fittest. In this natural process of a blundering, floundering start, without instruction or guidance, all possible faults may well be present at the start, and much time and ammunition is required to gradually eliminate by practice even the most glaring of them. By proper preliminary training, errors are minimized from the start, and by just so much is time and ammunition saved. Good shooting, like good golf playing and all else requiring skill, consists, after all, only in the absence of errors and "bad form." In all cases, while "expert" instruction is not absolutely essential, the period of apprenticeship is wonderfully shortened by an "expert" pointing out the nature of the errors made, and the best method of their correction, as well as emphasizing the lessons to be learned from each shot. As knowledge is largely only the result of the experience of others, ammunition can be saved by applying this knowledge to every firer, and by making the greatest possible use of this experience of others, from the very start. Then each shot fired will tell its own true story.

But the firer cannot see himself or his own errors, hence no self-instructor can do the work of an "expert" for the novice. In the excitement of a first "shoot," variations from good form are bound to creep in, no matter how careful the preliminary training, and cause errors needing correction. Thus the rapidity of improvement in shooting depends solely on the lessons learned from properly studying these errors and on quickly and surely finding their true nature, and by applying the proper remedy, insure that accuracy which can only be gained by preventing their recurrence. This is pre-eminently the work of the "expert," not of the novice. It should clearly be up to the officer, as an "expert," to explain to the firer the probable reason for the error made, and not force the novice to guess at it; and it surely takes an expert to determine whether the mistake lies in the position, sighting, aiming, or pulling the trigger, or mayhaps, in defective ammunition, as well as be able to give the recruit the proper corrections for external conditions. This demands special knowledge of the rifle on the part of every officer, for on all alike rest the duty of pre-

venting any shot being fired on the range, unless it is under conditions bringing the greatest possible benefit to the firer. It is granted that there is possibly necessarily a waste of ammunition necessary on the battlefield, but is it equally necessary on the range?

It would seem possible to embody in one book all this necessary knowledge of the rifle—a book written by experts and containing their knowledge and experience and made good and practical in order to keep the bogey “bookworm” off, containing all errors likely to be made by the firer, with good, practical pointers on how to correct them, as well as counteract the various other causes tending to destroy the accuracy of fire. Such a book made readily accessible to officers would remove all possible excuse for ignorance.

The present two government works on the rifle do not fulfil these requirements. Indeed, on the table lie a couple of books, the one, the government publication on the army magazine rifle, the other, a private work on small arms. A greater contrast between two books on the same subject could hardly be imagined, one being as dry, if not as valueless, as the other is interesting and valuable. The government work so filled with useless data and detail that it can hardly be given away, and when taken as a gift, only to be stored away to be opened only in case of dire necessity, has the one advantage of being economical, as no copies of it ever have to be replaced, for none are ever worn out through use. On the other hand, the private work on the rifle is interesting as any story and is bought cheerfully by thousands and read for amusement. Its pages filled with valuable as well as reliable information of the greatest practical value, their perusal places the rifle in quite a new light, giving it life and interest, and causing the beauty of the piece to be appreciated, while, were it possible for any human being to absorb all the dry dust and data with which the government “pamphlet” is filled, little, if any of it, would be found of practical use. For what earthly value, for instance, to anyone outside of Springfield Armory, is the information that the widths of mortise for the side plate of tenon is .02 of an inch? Yet this is only one case out of many which would lead one to think that the only description of the army magazine rifle furnished was intended for the drafting-room rather than the soldier. Nor indeed are all the dry tables that it contains even accurate, as in the one where the deviations for

the bullet for all ranges are given as to the left, when it is well known that at a certain point the "drift" passes from left to right, so that at a thousand yards the deviations to the right are even greater than this table "derived experimentally" gives for the opposite direction. Would anyone in the field be the better off for such a book; would the mastery of it make a man a better soldier?

But the small arms firing regulations as well contains much of this worthless detail, making pages of this valuable work worse than worthless to the soldier. Burdened with this useless information, the educational value of both these textbooks is weakened by not separating the wheat from the chaff. In this *mêlée* of useless knowledge with valuable, officer as well as man grows discouraged. Confronted by so many dry facts, by so many cautions, rules and regulations, petty details, the soldier is brought by these books to look on his rifle as his worst enemy instead of his best friend, and soon grows to look with envious eyes on the daily duty man, who can stow his rifle away out of sight and out of mind until the monthly inspection approaches. No wonder that the firing regulations mercifully limit the months during which the book must be used, and states that during this target season all other drills and exercises should be materially relaxed, as well as continually cautioned against lack of interest! These two government books, with their entanglements of don'ts and red tape, are enough of themselves to make target practice unpopular, and, in general, cause officers and men alike to give a sigh of relief when the prescribed course of firing is completed, if it ever is. The character of the books is such as seemingly to encourage the idea that target practice is a necessary evil, something tedious and boring, to be gotten through with as quickly as possible. In neither book is the possibility of sport to be had with the rifle even hinted at, unless it be in the special case of the winner of the Nevada trophy. Nothing, indeed, could be more deadening to interest or enthusiasm than this presentation of the mere skeleton, the dry skin and bones of a subject from which has been sucked all the life blood. The plea is for such a revision of the books as will put some life into the rifle—"Kiplingizing" it, if you will—thus encouraging officers and men to gain interest as well as knowledge of the rifle.

During the Boer war there was much comment in the newspapers over a poem written by Kipling, a lament over the

British love for sport, speaking of the "oaf of the cricket field, etc." It would seem that a truer note might have been struck, especially in the United States, had the lament been over the tendency of discipline and military life not to recognize the value of sport, or rather, perhaps, so to stultify and hedge in by unnecessary rules and formalities everything pertaining to the military profession and fighting men, that would be sport if taken up in a more liberal spirit, only serves to drive another nail into the dull routine of garrison life. Heaven forbid that anyone should favor increasing the deadening monotony of a soldier's life in the Philippines in time of peace. It is in searching for something to relieve the everlasting sameness of the day's work that the possibility of increasing sport as well as efficiency by rifle shooting appeals so strongly.

Outside the services we find abundant evidences of both this skill and sport with the rifle. Take, at home, the amateur sportsman who shows with swelling pride his pet rifle and dilates on its fine points and on the wonderful work he can do with it. The professional soldier may well be surprised at his enthusiasm, and at the knowledge of the rifle displayed as well as the study put on it; study, too, spent through pure love of the rifle. The pleasure that this amateur derives from his knowledge and skill with his Winchester and in keeping it "fit," is indeed a strange sight to the professional, who rarely, if ever, thinks of handling his rifle unless compelled to do so, saving all his work—hard work, too, he considers it—on the rifle, until just before inspection, so that he may be sure to pass, and perhaps receive some compliment on its polish.

In Switzerland, perhaps, this interest in the rifle is most displayed. There, though without a standing army, the inhabitants are said, as a whole, to be the best shots in the world. There, every man in the land belongs to some rifle club, and spends his hard-earned holiday out on the range having a day's sport, doing for the love of it what our regulations, as well as our men, seem to regard as hard work. No wonder that Switzerland, small as she is, has preserved her old-time freedom.

Surely there is as much logic, it may be said, in the amateurs making sport out of work as there is in the professional soldiers making work out of sport. Recognizing this, let the spirit as well as the form of the present authorized text-books on the

rifle be changed so that the pleasure to be gained from skillful handling of the rifle is recognized. Then make them simple and clear and interesting, while at the same time exhaustive, covering all the points, good and bad, of the rifle, and giving its limitations and possibilities. Containing the knowledge of the experts, together with the experience of the captains of the crack rifle teams, and filled with practical pointers on the errors in firing, and how to correct or counteract them, such books would remove all excuse for ignorance of the rifle. They might easily be printed with marginal headings for the different paragraphs, and with all the most essential parts necessary for all soldiers to know printed in coarse, heavy type, that for officers in ordinary type, while the more unimportant matter, necessary to be merely read over, could be put in small type. Have such books that after half an hour's reading by a person of average intelligence they could be laid down, if not regretfully, at least with interest aroused, and with a feeling of benefit because something of actual value in the field had been learned. Far from leaving the reader perplexed and bewildered, with all interest gone, such books would arouse interest and enthusiasm and aid officers and men alike to turn their superior intelligence into superior knowledge and skill with their weapons. Far from filling their readers with booklore, these books could be so written as to invite discussion and experiment, as well as desire to test on the range the points of the rifle.

With the present spread of intelligence and general education, and the increased necessity and importance of trained riflemen, all the information necessary for the soldier to know might be issued in pamphlet form, with plates, for distribution to the companies. The expense would be light, and, though to be sure, in many cases little or no benefit would be derived from such a pamphlet, still if only a few men in each company merely looked over the pictures, it would pay. Our men, who, on enlistment, are required to know how to read and write, should be given some palpable reason for requiring that knowledge. At least give those desirous the opportunity to "read up" on the rifle. As we pride ourselves on the superior intelligence of both our officers and men, we ought logically to make the greatest possible use of this superiority. An advantage not utilized is lost, and if we make no call on this superior intelligence, our soldiers might as well be ignorant serfs. The

most conspicuous as well as useful way in military life in which this superior intelligence can be displayed and utilized, is by encouraging, in every way, knowledge and skill with the rifle. "Walking post" in garrison, year in and year out, finally becomes deadening and mechanical, while "rifle shooting," properly conducted, always calls forth one's best efforts, and thus tends to awaken and enliven the soldier. Given the opportunity, encouraged by the expertness of his officers, with interest and enthusiasm aroused, the American soldier is eager and quick to learn to make the best possible use of his rifle, to do with it all that any other man can do with it.

With the changes due to the introduction of the magazine rifle, with the increased recognition of the importance of accuracy and instruction in musketry, and with the spread of education and the far greater intelligence of our present soldiers over those of former days, it is thought possible that the system of training of former years, admirable as it then was, might be adapted to these changes, and under present conditions, a more scientific, progressive and systematic instruction be now found practicable for both officers and men, so as to enable every soldier to get the most out of his weapon in the shortest time. In the light of the lessons of modern war and science, and with the knowledge possible to be gained from experimental psychology as to the fatigue and training of the senses, nerves and muscles, all the experts might meet again in a congress to deliberate on the best system of imparting to recruits the ability to hold the rifle steadily, sight clearly, and fire accurately. These "experts" could also determine by experiments, if necessary, questions like the value and practicability of the volley. As improvements in the methods of training in all other branches of human knowledge and skill have been made within the last few years, similar improvements might be found possible in rifle shooting.

After deciding on how to attain a maximum of results with a minimum of time and ammunition, the exercises determined on as essential might be embodied into the drill regulations, so that the principle would be clearly recognized that it is as important, if not more so, to make of the soldier a good shot, as to make him smart in the manual. Then it would be unnecessary to publish general orders calling attention to the requirements of the drill in firing regulations, as all officers would have the exercises constantly at hand in their drill regu-

lations and practise in them would go along hand in hand with drill in the manual. This change would tend as well towards unity and prevent the present variations between the drill regulations and the firing instructions. Surely if the firing exercises are of any importance, they deserve a place in the drill regulations.

Until both soldier and piece are brought equally to the highest possible point of perfection, until the best possible rifle is placed in the hands of the soldier trained to the highest limit of skill in bringing out all the possibilities of the piece, an inferior arm and a less intelligent soldier would answer as well. To accomplish the desired result the soldier must be developed by the best possible training, under able instructors. Capabilities or resources not developed or utilized, for all practical purposes, cease to exist. Mediocre results are only worthy of mediocre methods of training and mediocre instruments. The finest soldiers with the finest rifles in the world should, after the best possible training, be able to lead in the world's marksmanship.

With the course of training decided on, the start should be made with the recruit, for it is at that period that the future soldier is peculiarly pliable, eager for knowledge, and susceptible to molding. It would be well if the old sway of the drill sergeant were to some extent curtailed, and were it practicable, for the younger officers to take at least some of the duty of breaking in recruits, than which there is no better school of the soldier. Even if a few days longer time were required, there would be no harm done, and the closer supervision of the instruction of the recruits by the officers would be well worth while. As the recruit is trained, so is the soldier made. Enlisting full of interest in his rifle, the tendency of the present methods of the drill sergeant is to quickly destroy all this interest.

Now, as from time immemorial, the drill sergeant in his eagerness to turn his awkward squad over to the company in the shortest possible time, naturally rubs the manual in so hard during the first few days of the breaking-in process, that the aching bones of the recruit soon make him feel that the rifle is the devil's own invention, a horrible thing of wood and iron, weight ten pounds, that he has to lift up to his shoulder and down again so many thousands of times before he ceases to be a recruit and is fit to take his place on parade along with

soldiers. This, in a few weeks, he proudly does, as a full-fledged soldier, though still as ignorant as ever of the possibilities of his rifle as a weapon, of how far it can throw its lead, least of all what he can hit with it. So this three-weeks-old soldier joins his company with all interest in the rifle completely gone, but feeling that he knows everything necessary to be a soldier.

Would it not be possible for him to have such training as to maintain, if not increase, the interest that he has in his rifle at the start, even if the time-honored methods have to be modified? Could he not be taught to take a pride in the rifle itself, beyond and above burnishing and polishing it; a pride not only in its polish, but in his increasing knowledge and skill with it? Could not his instruction be more progressive, learning something new each day to impress him with the beauty of the rifle and its mechanism? Have this instruction in the power to make of his rifle a dangerous weapon in his hands commence from his first day in barracks. Let him see the interior workings of the piece, and later on let him see it taken apart and assembled. Overcome his awkwardness in handling the piece by encouraging free handling of it, thus letting him gain knowledge of its heft and balance, and making the instruction less irksome and a trifle more scientific, if need be. No one will suffer from the change, and the spirit of interest retained by the recruit during his after years of service, will amply repay the additional trouble and time. Make sure that the recruit realizes that looking well on parade and guard is not all that is required of a soldier, by showing him that the rifle has other uses than the purely ornamental, and that no matter how old the soldier is there is always something new to be learned of the rifle. Have him learn what he can and will from the pamphlet placed in his hands, and give him as a recruit at least some instruction along with his manual in the necessary position, aiming and sighting exercises. Teach him from the very start, so that the rifle in his hands will be of the most danger to an enemy and to no one else. Grind into him that while any old woman can pull the trigger, it takes a true soldier to make his fire effective, and develop the full power of the rifle so as to get all there is in it out of it in such a way as to do the greatest damage to the enemy. Then show him that this skill with the rifle means so much that, while perhaps any man can become, after a few trips out to the range, a fair shot, it is only after months and years of good, enthusiastic effort, that

he can reach the goal of all soldiers and become a "crack shot." Finally, start him fair, and if it be practicable, let him shoot once at least on the range before he can claim to be a soldier and pass into the ranks as such.

It may be well said that all this would require a longer period of recruitship and that it is against the traditions of the service, as the best drill sergeant is he who breaks in his men in the quickest time; that it is impractical or theoretical and visionary, and if necessary could all be done later on. But is it always so done, and would not it prevent the possibility in future of the American soldier having to fire the first shot from his rifle at the enemy and prevent as well that list of casualties due to accidental discharge of the pieces? It is said to take three years to make a soldier, so why call the recruit one in as many weeks. It gives him a false idea of his knowledge and makes him feel that there is nothing more for him to learn, as well as lowers the standard of the company. In any case the dull monotony of guard duty will come quickly enough to the recruit. The idea would be not to go to the other extreme and require so much at the start as to bewilder the recruit, but rather to keep up his interest by giving him an idea of what a soldier should know and be able to do with his rifle, and impressing on him that no one is fit to wear the uniform unless he can handle the rifle with at least a fair degree of skill. If this longer period of apprenticeship were required of the recruit, the raise in the standard for joining the companies would increase the *esprit de corps* of all, and the pride in being a soldier.

Following up the start that has been made with the recruit, allow no one's interest to flag for an instant, but carry on the soldier's instruction further and more in detail, going into the fine points of the rifle. As we want our men to fight intelligently as well as independently, if necessary, take up the rifle systematically, explaining every detail; the why and wherefore of every part; why as well as how it is forged, tempered, annealed, rifled, bronzed, and its parts assembled. After this instruction there would be no more need of orders prohibiting the destroying of the temper of the barrels by improper rebronzing nor cautions concerning the improper use of emery on rifles.

As skill is only another name for the application of knowledge to constant practice, every man should be encouraged to

increase his skill and interest in the rifle by being given every possible chance to practise with it, encouraging handicap and pool shots, promoting and rewarding the best shots, and spurring on the poorer ones by giving them to understand that the poor bad shot shows his manifest unfitness for the service. Every soldier could know his own capabilities with the rifle, and should finally be trusted at all times to fire it, even in the absence of an officer, and even perhaps without having to keep a record of his shooting. Then, in action, he can be relied on not to attempt impossibilities with it, and his fire when delivered can be counted on as being effective. When trained to be as proficient in firing as in the manual, it will become second nature not to fire unless on the target, and the soldier will intuitively press the trigger at the very best time; then wild shooting will become as impossible as in a well-drilled battalion would be a ragged manual on parade. The days would indeed be over when it took the expenditure of a ton of ammunition to kill one of the enemy.

As shortage of the ammunition supply nowadays is almost invariably due to wildness in firing, this increase in accuracy of fire would be a more efficient remedy than any method practicable for replenishing the ammunition supply. Under the bettered conditions, with the rifle occupying its proper place—the foremost in military life—professional soldiers would not have to go to the amateurs to find crack rifle teams, nor would it be necessary to explain that owing to the demand of active service the best shots are found outside the service. Entire companies, not individuals merely, could be trusted to do with the rifle all that anyone can do with it, and each American soldier in the firing line would be the first to hit, as well as the last to quit.

Again, by acquiring this skill with the rifle, the *morale* would be improved, and the soldier's *esprit de corps* and pride in his profession would be enhanced. Knowing his superiority over the ordinary *hombre* with a rifle, he would glory in his skill, and be eager for every opportunity to show his prowess. The sharpshooter would feel that his skill with his rifle was of some real value to the defense of his country, and his knowledge that he could do one thing well, much better than anyone who would take his place, would tend toward contentment and long and faithful service. With skill with the rifle occupying the first place in the soldier's professional equipment, with

freer competition and rivalry in the sport, under conditions approximating as closely as possible to those of war, the enervating dullness of garrison life would be alleviated, and the discontent bred of peaceful times diminished, while as fighting men, our soldiers would be superb.

Following this wider knowledge and recognition of the rifle and the greater opportunity to acquire and display skill with it, the soldier would soon learn to take the same pride in his weapon that the engineer does in his engine, or the amateur crack shot in his pet firearm, and rifl shooting would come to be regarded as one of the sports of military life, and be practised as a pleasure. The soldier would need nothing more to enthuse over than his rifle—that constant companion of his years of service—growing to love it, with its associations, as his best friend. The rifle would take its proper place and be foremost in the soldier's life and thoughts as well. The garrison's talk of rifle matches would be as unending as the Britisher's talk of cricket matches or the golflst's talk of "drives" and "puts."

Regarded as the most wonderful as well as most powerful weapon in existence, embodying the highest thought and labor of civilized man, so powerful that it has made the map of the world, so sensitive that the slightest variation or error in handling affects its accuracy, this bit of true wood and steel, whose trail, since the invention of powder, can be followed by the blood of those millions who have created history, can surely be made of the greatest interest, and is worthy of the best efforts and study of all men, but above all of the soldier. Even if some demand of active duty or some parade or fatigue detail must be neglected, the ability gained to shoot accurately and rapidly will compensate; for, as Napoleon so well said, "fire is everything, all else is nothing."

In conclusion, the writer would summarize the theoretical measures suggested as necessary to arouse a more general interest and skill with the rifle.

Require all officers to obtain what is now known as "expert" knowledge of the rifle. Make this easy as well as possible of attainment by making this expert knowledge accessible in such a revision of the official government publications on the rifle as will make them interesting as well as clear, exhaustive and authoritative. If necessary, call a congress of experts to accomplish this, and to discuss in the light of modern knowledge the best method of training recruits to become good shots

in the minimum of time and effort, as well as settle mooted questions. Then let the exercises decided on as essential for good shooting in the training of good shots be dropped from the secondary firing regulations and be embodied in the drill regulations, so as to be constantly practised along with the manual. Give skill with the rifle the first place in military life, removing all unnecessary restrictions and regulations on free practice, and encourage constant practice or instruction throughout the entire year, as is now the case with company drills. Do not allow interest once aroused to die out because of lack of opportunity to display it. Modify the existing methods of breaking in recruits to meet modern requirements and conditions, letting his progress in the manual and in the principles of rifle shooting go hand in hand, and keeping up his old enthusiasm. Finally, as only a small percentage of applicants are able to fulfill the requirements for enlistment, let it be felt that no one, after a sufficient period of instruction, is fit to wear the uniform unless he meets the most important of all the requirements of a soldier, the ability to hit the mark with his rifle and deliver effective fire.



LETTERS TO A NEW CAPTAIN OF HORSE FROM HIS FATHER, AN OLD TROOP COMMANDER.

BY CAPTAIN MATTHEW F. STEELE, 6th CAVALRY.

FIRST LETTER.



YES, you must take reveille yourself. Of course it would be easier on you to make one of your lieutenants take it, as your captain made you do during the two or three years that you remained a lieutenant, and no doubt it would be to you a sort of vicarious revenge upon that captain; but it would not be as well for your troop. The captain ought habitually to see his troop started off right in the morning. Of all the hours of the day, the hour of reveille is the one when he can see the largest number of his men together—before the details and the special-and-extra-duty men and the sick have gotten away from the troop.

Soldiers like an active captain, and they look upon the habit of voluntarily getting out at reveille as one manifestation of activity. They like a captain that is willing to begin work with them, and stay with them to the finish—one that is willing to give the service as many hours of his own time as he exacts of them. Laziness is the worst fault any cavalryman can have, but it is more out of place in a captain than in any other cavalryman. To be sure, I have known lazy captains to have well-disciplined, well-equipped troops; but I have never known one such to have a well-instructed troop—in which men and horses were thoroughly trained, unless he were fortunate enough to have at least one live, enthusiastic lieutenant.

Good sense, sound judgment, much learning are first-rate qualities, good for a man in any calling; but activity, the quality of going and doing, wins over them all, especially in cavalry. Moreover, good sense and sound judgment are gifts of God, and a man can't help himself if he hasn't been endowed with them. Much learning, of course, is question of much study, sometimes of much wasted time. I have known more than one cavalryman's usefulness to the service

lessened by too much study of books. It is apt to lead to a taste for the Morris chair and a distaste for the saddle. It is apt to fill one's head with unproved and impracticable theories. The only book-knowledge of any real necessity to the soldier is that which can be put to practical use in his business. The rest is merely accomplishment, luxury, pastime, dilettantism. Yet men there are in the army, as elsewhere, who fancy that anything they read in a book bears the stamp of truth; if in a foreign book, it is coin; and if printed in a language other than English, it is coin of the first value.

Of a truth, nearly every book that comes from the printer has some good in it, but most of them have too much padding. Their authors are not content to write down what they know to be good and practical; they must also pad with a lot of theory and stuff they have not proved by practice. One-tenth of General Wolseley's "Soldier's Pocket-book," for instance, is excellent. It is almost worth looking for through the other nine-tenths of rubbish. One-tenth of it, too, would have made a pocket-book, while the other nine make of it a book too big to have room in an officer's saddle pocket.

Activity is not necessarily a gift of God. Any man can have it that wants it—unless he has malaria. It is a constant, ever-recurring conquest of will over flesh. Nearly every man is naturally lazy, and only the few that put forth their strength of will and rout their sloth are the ones that succeed. Look at the soldiers that have come to the front in the last four years. You have probably met them all and conversed with them. Is there one among them that impressed you as being wiser or fuller of knowledge than scores of obscure officers you know in the service? Is there one among them whose plans of organization, combination, strategy or tactics show any unusual military genius, or a knowledge of the art and science of war far above that of their less successful brothers-in-arms? Yet they are, as a rule, fine soldiers. Few mistakes have been made in their election. They have risen by their merits, and the chiefest of these is their activity. They have worked energetically, swiftly, untiringly, incessantly.

And it has ever been the same throughout history. Opportunity and activity have made more generals than any other combination. Soldiers cannot, of course, succeed without

opportunity. Every man must have his chance; but given a chance, and it is as Demosthenes—or some other ancient that talked—I have no reference books at hand—said, “action, action, action” that bears him on to victory.

So be active always. Get up at reveille and go to your troop. Don't wear “reveillés” as you used to do at the Academy, in spite of the vigilance of commandant and “tacs.” Take your bath and do your little stunt of the setting-up exercises. Above all, don't go back to bed after the roll-call. This is a common habit, I know, especially among those lieutenants whose inactive captains require them to take reveille; but it is a lazy habit. And never sign your morning report in bed or in your pajamas. Be active even in appearance; it sets your men a good example. Carry yourself “collected” always. Walk on your muscles and not on your bones. Don't lop. Whatever you have to do, do it with all your might and main, and rest at the end of it. There is genuine pleasure in honest fatigue, and delight in well-earned rest.

SECOND LETTER.

Immediately after reveille roll-call your troop should do the seven setting-up exercises laid down in the Drill-Book (pars. 45 and 46) for seven minutes—no more and no less. Let your sergeants take turns in giving these exercises to the troop; but don't excuse any well man from them, except the cooks, whom you will have to excuse. Every officer and soldier ought to do these exercises for a few minutes on at least five days of each week during the entire term of his service on the active list. But avoid keeping your men at them too long a time. Don't disgust them. Seven minutes a day is long enough, and the seven prescribed exercises are plenty in variety to keep a cavalryman square of shoulder, high of head, supple of muscles, and “collected” of gait; and the seventeen mounted exercises (D. R. 310) will keep him agile, fearless and firm of seat upon his horse. The men should be allowed to remove their blouses and do the exercises in their undershirts, or better still in their bare skins. To exercise them in breathing right, and to improve their wind, have them march to stables habitually at the double-time.

Of course you will inspect the food and the kitchen and dining-room at breakfast, as well as at other meals. And you had better see that both cooks are in the kitchen. They may be allowed to take turns in getting up early to start the fire, but no cook or other soldier should be allowed to lie in his bunk after reveille.

Require your men to wear their blouses and be neatly clad at meals. It is no hardship, and it makes for self respect. Many of them would, if allowed, appear at the table in their sweaty undershirts like farm hands.

You will have to sign your morning report in blank, or compel your overworked first sergeant or troop clerk to trudge over to your quarters with it after the sick report comes back from the hospital. You will, undoubtedly, be reported for it by some inspector and made to write an explanation. But you must learn from the very start to have no fear of inspectors, and to do nothing solely for their approval. Strive, rather, to do everything that you have to do, for its own sake, and to the best of your ability and understanding, and for the best interests of the military service, taking the Army Regulations, as far as possible, for your guide. This is a right good book, even though it does change so fast and so often that one cannot keep pace with it. The longer you live, and the better you become acquainted with it, the more you will respect it.

See the men of your troop that want to go on sick report, and sign your sick book every morning. Don't let the book go to the hospital without signature for a fortnight or two, and then sign it up at one sitting. Aside from its being a slovenly practice, some time you may run afoul of one of our latter day surgical soldiers who will refuse to treat your sick because you have neglected to sign your book. You don't want one of your faithful men left to die for lack of your signature, however illegible it may be.

I hope you have a good cook. I won't say two good cooks, because I know that is quite out of the question. If you have one, your troop is highly blessed. Owen Meredith didn't know what he was talking about when he said, "civilized man cannot live without cooks" (Is my quotation right?). Most of us nowadays are living without cooks. Some day, after my time and maybe after yours, Congress will allow a chief cook in each regiment, with pay big enough

to make it possible to get a man for the office that knows his business. This pay would be much less than the present cost of the food spoiled by bad cooks. This cost, however, falls directly upon the soldier and not upon the Government, but it reacts doubly upon the Government by way of the time lost and the medicines expended on account of sickness due to bad cooking.

The chief cook's duty would be to teach the troop cooks. And it is believed that if Congress gave us a regimental chief cook, he would be allowed to perform his legitimate functions, now that the regimental band is by law given a reasonable number of musicians. The adjutant would not have to eke out his orchestra by taking him to play the bull-fiddle or the tambourine and triangle, as he used to have to do with the saddle sergeant and the chief trumpeter. Of course he would make him cook for the band, unless the colonel planted his commanding foot squarely upon the proposition.

While your troop is at breakfast, and again during afternoon stables, have all the windows of your squad-rooms flung wide open to let out the dead, foul air, and to let in fresh. This is even more necessary during the coldest weather at far-northern posts than elsewhere and at other seasons.

At stable-time, both morning and afternoon, all bunks and shelves should be in order, and all dirt and trash swept from every man's bunk space to the middle space of the squad-room; and while the troop is out, the room orderly should finish sweeping the floors and removing the dirt. See that he keeps the lamps in good condition and fills them by daylight (A. R. 296). And do not be discouraged—you may live long enough to behold barracks lighted by gas or electricity. The quartermaster's department never lags behind more than two generations in such matters. Electric lights had not become common throughout the United States before sperm candles were done away with in our barracks, and kerosene adopted in their stead.

Cavalry officers of the "old school" will insist that a troop officer must be present at both afternoon and morning stables. I am not yet old enough to think so. All the officers of the troop ought habitually to attend afternoon stables. It is the best place and time to "talk horse," to get acquainted with the men and horses, and to discuss troop matters generally. One can pretty nearly judge what kind of trooper

a man is by the manner in which he grooms his horse. As to morning stables, if you have drill immediately afterward you can then see that your horses have been groomed properly; and if you have a good first sergeant, which you must have if you hope to have a good troop, you will usually find that they have been. Far more necessary is it, in my poor judgment, that an officer should be present to superintend the morning feeding; but this has never been insisted upon even by the worst sticklers of the "old school," nor required by the book (par. 998).

The trouble about morning stables is that it fills in the only space when an officer can get his breakfast before drill. If he must attend this duty, he must either go to drill on an empty stomach, or he must upset the breakfast routine of his family or mess. Of course this would be a minor consideration if his presence at morning stables were question of necessity or importance; but it isn't. The fact is, the meals of officers are never given any consideration whatever in the arrangement of service hours in a garrison. Drills, fatigue, stables, parades—every duty is timed with reference to the hours of the soldiers' meals (A. R. 444), but officers and their families are expected to eat at any old time they can find betwixt reveille and taps. Half of my breakfasts in the army have been eaten cold and unpalatable after spending the morning on the target range or at drill; or they have been gulped down by the watch which lay open beside my plate.

THIRD LETTER.

Have your men follow the instructions laid down in the Drill Regulations (par. 997) in grooming, but encourage them to throw the weight of their bodies against the brush and make long, vigorous strokes. You will find, however, that they usually groom the trunk well enough. The points they often neglect, and, therefore, the points you must examine while your men are at heel, are the face, eyes, nostrils, and the hollow space between the jawbones, the belly and the under side of the breast between the forearms, the inner side of the flanks, the bare skin between the hind legs and the under side of the dock, the feet, the under side of the pasterns and the fetlocks. It takes attention on the part of the officer in charge, the first sergeant and the chiefs of squad to make

the soldier clean these points properly. The trooper's grooming-cloth, a piece of grain sack or condemned blanket, is as important an article of his kit as his brush and currycomb. A pail of water should always be placed on either side of the picket line during stables, for the men to wet their grooming-cloths in. This is especially necessary at dry, dusty posts.

The mane and tail of the cavalry horse bear about the same relation to his appearance that the hair and beard bear to the appearance of the soldier. Whether they add or detract depends upon how they are kept. Uniformity enhances the military appearance of an organization more than almost any other single quality. Even a uniform half-neatness is less conspicuous than a part spick-and-span and the rest in various stages of squalor and age. If you will keep the tails of all your horses cut off square at the hocks, their fetlocks neatly trimmed—not too close—their forelocks and manes, at the place of the crownpiece only, clipped short, and the rest of the mane evenly plucked—not cut—to a uniform length, you will improve the military appearance of your mount more than you have a notion of, unless you have already tried it. You will have to get some good groom to show you how to pluck a mane—it would take two pages of ink for me to describe the process to you.

Some "old school" cavalymen will tell you that cutting the tails of your horses will subject them to the torture of flies. You must not, however, cut them short enough for that. The tails of many horses do not at their natural length reach below the hocks. I have known some of the very officers that insist upon leaving the tails at their natural length—some short and scraggly, and others dragging in the mud—keep their animals tied in their stalls all day long at the mercy of flies. A horse without the stub of a tail can make a better fight against flies, running loose in a paddock, than one can make tied up in a stall, though his tail be sixteen feet long. So never leave your horses in the stable or tied at the line during the day if you can avoid it. It is the most hurtful sort of punishment. If you have enough lumber to build either a paddock fence or a stable, but not enough for both, enclose the paddock and let the roof wait—except in the Philippines, where your horses must have shelter from the rain and sun, and a dry place to stand upon.

The best safeguard of all against flies is to have none. Flies are the bane of cavalry. They and bad stations are its only drawbacks. We can't avoid bad stations, we must go where we are sent; but by eternal vigilance we can pretty nearly get rid of flies. Recent investigations by Dr. Howard of the Agricultural Department show that house flies, and they are the ones that trouble us most, can "very rarely be induced to lay their eggs upon anything but horse manure and cow manure, and their preference for the former is very marked; and although eggs were laid upon cow manure, the larvæ were unable to mature in this substance." He also found that under favorable circumstances 1,200 young flies were hatched from one pound of manure, and that each fly laid 120 eggs. When these facts are considered in connection with the discomfort and torture inflicted upon man and beast by these disgusting insects, not to mention their agency in the spreading of diseases, it would seem that we ought to fight them as we do the plague. Every ounce of manure about the premises of the troop stable and paddock ought to be burnt or treated with kerosene or chloride of lime daily.

Be sure to have some old hay or straw packed down in a far corner of your corral to serve as a urinal for your horses. They will learn to use it in very few days, and it will keep them from staling upon their clean beds every afternoon the first thing after they are tied in their stalls. A horse hates above all things to urinate upon hard ground and spatter his legs. On the picket line and in a hard paddock he will hold his water for hours—to the injury of his bladder—in order to make it upon the straw bed he counts upon finding in his stall.

FOURTH LETTER.

In your dealings with your men try first to be just. It isn't easy. It requires infinite care, some judgment, and absolute subjection of one's personal feelings. Most of us should, no doubt, be glad always to be just; the rub is to determine in every case what is just. Let your prayer be: "Help me, O Lord, to be just to my men, to be patient with them, not to expect too much from the ignorant; to control my temper with horses and men; never to humiliate a soldier; never to be sneering or sarcastic, nor abusive in language or manner to one; never to try under any circumstances to be

"funny" or facetious or joking with soldiers, but always to be dignified and in earnest in their presence; never to set one a bad example in anything, nor expect one to be a better man, soldier or citizen than I am willing to be myself; never to be imposed upon by the bad or the bootlicking, nor prejudiced against them that try to do their duty; always to keep a just balance between my duty to my lieutenants and men, and my duty to the service; never to be actuated by a selfish personal motive; never to leave undone anything that would benefit my troop, my regiment, the military service or the Government. Amen. P.S. Use such influence as you may have with Congress to induce it to grant our non-commissioned officers pay commensurate with their duties and responsibilities." That is all the daily prayer a captain of cavalry needs to say.

Don't coddle your men. Treat them always as men, not as children to be nursed and persuaded, and as men from whom the Government is entitled to faithful, honest and industrious service. Discourage the notion that the army is the place for lazy men. The cavalry certainly is not. But don't expect your men to work more hours out of the twenty-four for the service than you yourself are willing to work. Endeavor to imbue them with pride in their troop, their regiment, the military service and themselves. Make each man feel that the troop is as much his as yours. And don't forget that your lieutenants also have claims upon the troop, and rights and interests in it. Don't fall into the idea that they are merely to relieve the captain of some of his duties. If you have a second lieutenant just joined, you should give him opportunity to learn all troop papers, as well as other troop affairs. To this end you should put him in the orderly room and keep him there until he learns how to make out all such papers.

Grog-shops, dice (and cards), women—abolish these and discipline will become as easy in the army as in a young ladies' bible class. And their most baneful allies are monotony and idleness. "Variety's the very spice of life" nowhere more than in a troop, and nowhere is idleness more pernicious. Keep your men busy but interested, and you will insure contentment and discipline. There is so much for a cavalryman to do and to learn in his three short years that there should be no danger of monotony in his work. Except when

in the field, the troop should have at least two hours of practical *cavalry* instruction every week day. I have gone through rainy seasons in the tropics and winters in the Dakotas, but have never yet experienced a day when it was necessary to make an exception to this rule; and I have seen very few days when the instruction could not be given in the open.

You may be sure that if your men lie idle on their bunks between meals they will grumble at their mess; but I have never seen a trooper complain at the quality of his dinner at the end of a forenoon spent in the saddle. You may not be able to achieve good cooks, but you can make good appetites. Good appetites are not squeamish. Quantity is about all they demand, and that the army ration affords.

I don't at all favor a troop billiard table and a amusement room. I believe they make for laziness, slovenliness and narrow troop-cliquishness. Some captains say that they help to make their men stay in quarters. Maybe they do, but I don't want my men to stay in their quarters. I want them to get out and breathe the fresh air and mingle with other soldiers. Soldiers that stay in their quarters are lazy, and I prefer wicked active men to harmless lazy ones. They may be more trouble, but they are of more use. Therefore, I believe it is better to have the billiards and games at the post exchange, as an incentive to the men of the different troops to assemble together socially. It promotes good fellowship in the regiment or command. The post exchange ought, in its main features, to be the soldiers' club. A billiard table in the troop quarters serves as a temptation to the men to lie on their bunks till their heads ache, then to get up and lounge half clad into the billiard-room, there to sprawl and drowsily look on, while two other soldiers, in their underclothing, wearily punch the balls around on the table. How much better and more conducive to health and good temper and self-respect to put on one's good clothes and go out into the fresh air for a brisk walk, and then to the club (exchange) to meet and chat with friends from other organizations. Every soldier ought to put on his good clothes and feel respectable at least once a day. It takes a good deal of effort voluntarily to put on one's "other suit," and there is no surer sign of indolence than slovenly dress on the part of a cavalryman.

One sort of coddling consists in allowing men of the troop to have "extra" articles in their kits—"extra" bits, belts, spurs, etc. Don't do it. It simply means that the men go on drills, marches and other duties with dirty, rusty equipment and keep their "extra" ones wrapped up and hid away for inspections and parades. A cavalryman should have one complete kit, and he should keep every item of it at all times in the best condition practicable under the circumstances. The conditions of service in the Philippines have been so hard and trying, with rain and mud and fearful heat to contend with, that it would have been cruel and inhuman not to allow some relaxation in this respect; but under ordinary circumstances of garrison and campaign the horse equipments and arms should be cleaned after every duty, and at the end of each day's march, before they are put away. The horse equipment should be inspected daily by the captain, at afternoon stables in garrison and at retreat on the march. The bit or snaffle must always be wiped clean and dry as soon as it is removed from the mouth, and in a damp climate it ought to be wiped with an oiled rag. A rough, rusty bit is uncomfortable and injurious to the mouth. In freezing weather no good cavalryman ever neglects to warm his bit before putting it in the horse's mouth.

Where the horse-furniture is liable to come in muddy from drill or other garrison duty, a pail of water should be kept in the saddle-room for use in cleaning it.

Don't allow your quartermaster-sergeant to accumulate surplus property. If he is an old-timer, and you do not watch him, he will load your store room down with old plunder. He will be so afraid of letting you get short that at every condemnation he will rescue old junk which the inspector thinks he has seen destroyed, and pile it away. Have no fear of getting behind in your property. Try to keep just what your returns call for, and no more. Make it your rule always to take the best care you can of all public property you are responsible for; take an inventory of it at the end of each quarter, checking up that which is in the hands of the men, and you may be sure you will never be made to pay for any loss or damage your property may suffer. I have found that the various supply departments are reasonable in their requirements of officers responsible for their property. All they expect is that you will take the best

care of it you are able to, and that you take your inventories regularly and thereby know always how you stand. Never receipt for troop property without first seeing it and taking an inventory of it.

FIFTH LETTER.

There is no end to what you must teach your troop; and work faithfully and intelligently and steadily as you may, you will still never attain such a degree of instruction and training of men and horses that you will have nothing left to do. There is no perfectly trained trooper or horse. Three years, the term of his enlistment, is not time enough to make even a well-trained trooper. It would hardly be if there were no "fatigue" to take his time from drills, and no sickness and special-and-extra duty, and you could regulate your own hours of instruction without reference to the necessities of the garrison or the idiosyncrasies of the commanding officer.

You must regard each trooper and his horse as a unit, as "two hearts that beat as one," and you must strive to make them so. A well trained horse under a recruit that rides on stirrup and bit, and gives false signals with leg and rein, is much better in the rank than an untrained or spoiled horse with a trained trooper in the saddle; but either combination is bad enough to break up any good troop.

Spend most of your time, therefore, training your horses and teaching your men horsemanship. It takes infinite patience and many months of toil to train a cavalry horse; but once rightly trained, he is good for ten to fifteen years of work, and pays for all the time and patience expended upon him. Given seventy-five perfect horsemen—men that know how to sit their horses and how to use their reins and legs and spurs; and given seventy-five horses perfectly bit-wise, rein-wise, leg-wise and cavalry-gaited, both men and horses being absolutely ignorant of the commands and the movements in the Drill-Book, and any good cavalryman can make a perfectly drilled troop of them—fit to appear in any regimental or squadron review or parade, or drill before a cavalry inspector, in a fortnight's time.

By the way, you may live to see the day when your troop will be inspected habitually by a cavalryman; when we may even have an Inspector-General of Cavalry, like some other

armies. It will not be in my generation, so you ought to have better cavalry in your day than we have had in ours—rather, I should say, your inspections will be matter of greater concern to you than ours have been to us; matter of greater interest. Inspectors of other arms, or of the Inspector-General's department, are well enough to condemn worn-out equipment and property, except horses, and to see that the prescribed number of buttons are worn, and the regulation width of stripe; but when it is question of criticising the work of cavalry, why—well, they are simply not inspiring; that's all there is on't. We cannot persuade ourselves that they have the professional knowledge of our arm required to judge the technique of our art. In this age of specialties we don't believe in the possession of universal knowledge by individuals. Of course a general must know how to make use of all three arms, but, unless his brain be hyper-Napoleonic, he must needs have forgotten some of the details of those arms. I can easily fancy that even a cavalryman, acting as inspector, might fail to note the fine points in the manipulation of the disappearing gun-carriage, the three-inch field piece, the hospital corps man's pouch of dressings, or the infantry soldier's blanket-bag.

At drills don't spend too much time explaining, especially repeating; it is liable to weary your men and make them lose interest. Don't rebuke a man unless you be sure he is careless or otherwise at fault. Yet you must have every man's constant attention and earnest effort; and after explaining a movement, you must have it executed rightly, and you must point out the mistakes made, calling by name the man that has gone wrong. It is of no use whatever to execute a movement incorrectly and slovenly over and over again. Be careful not to hold a trooper accountable for the bad behavior of his horse unless he be responsible for it. Try the horse yourself; more than likely he was spoiled before his present rider got him. Tell your men tersely and definitely what you want them to do, and don't reiterate your orders and instructions over and over in different forms and phrases meaning the same thing.

Two things you must insist upon always, yet try to do it without leaving the effect of nagging upon your men. First: Require every man to ride at attention and keep his horse at attention, collected. Young or ill-trained horses, like

recruits, will slouch in ranks, if allowed to. At the walk or trot they will stretch out their necks, and stumble along with their noses almost dragging the ground. At the halt they lop over on three legs. Veteran chargers, like old soldiers, do none of these things. When in ranks, except on a long day's march, they are on their muscles, at attention, collected. At the halt they stand upon all four feet with crests aloft. At the command "rest" or "at ease," it is only the recruits in ranks that lop over on one hip. There is no visible change of posture on the part of ten-year soldiers. The same is true of cavalry horses.

Sometimes you will find in your mount a lazy or ill-trained horse that slackens his gait and falls behind at the walk or trot whenever the rider picks up the rein to collect him. The trooper can cure this habit in nearly every instance by carrying a small quirt or switch with which to touch up the horse whenever he lags, keeping him collected all the while. Nine cases of stumbling out of every ten come from slouching on the part of horse or rider. It is good practice to trot, or even to gallop your troop now and then over rough ground containing old furrows, scattered boulders and clumps of low shrubs and weeds. It exercises your men in keeping their horses at attention and upon their feet. It is also good to have a depression, a ditch, a pile of rock or lumber, or other obstacle, somewhere in your drill-field to take your troop over in line at the trot and the gallop, in order to give it practice in getting back into shape after it has been broken up by the inequalities of the terrain. Such obstacles are liable at any time to lie in the way of a charge, no matter how well your ground scouts may do their duty.

Second: Require every man to gather his horse at every preparatory command. This seems easy, and it is repeated so often in the Drill Regulations that it may seem out of place for me to remind you of it in a letter. Yet there is no command or injunction of the book so often neglected. Without it there can never be simultaneous movement at the command of execution. The usual way is for the trooper to sit perfectly still without a change of muscle until the command of execution, and then to jab his heels into the horse's ribs and start him off at a jump. That is not horsemanship.

SIXTH LETTER.

To give the best results your drill-field ought to be two miles from your stable. This will give you opportunity to lay out a gaiting track on the way, and enable you to get your men and horses limbered up, and your horses quieted, before you begin movements, as well as cooled off before you return them to the stable or corral after drills. If you keep your troop out three hours from start to finish you will have time enough for drill movements.

You will have trouble getting your men out to drills. With a troop of 75 men, one might expect to take out 16 sets of fours easily; but what with your sick and absent, your extra-and-special duty men, your guard and cooks, you will be lucky if you get out 14 fours. It is better far to have 64 of your 75 troopers at 40 drills than to have 40 at 64 drills. Each individual would attend the same number of drills in either case. If your commanding officer will allow each troop of his garrison to take its turn in doing all the routine post duty for a day at a time—the guard fatigue, etc.—instead of clinging to the old way of having a little squad of men detailed daily from each troop, you will be enabled to take out more men and horses at each drill. This scheme was tried at one cavalry post where I was stationed, and it worked well and gave good results.

There are a few little "stunts" that I put my troop through at nearly every drill. The entire program of them doesn't take more than 15 minutes, and I have reasons for them, or think that I have. They are the setting-up exercises, as it were, of the cavalry unit, the man and his horse.

1st. Halt in line from the trot.

Many good cavalymen say you should not halt your horses from the trot; that you should first bring them down to the walk. And in fact it is a bit hard on the horses, but our Drill-Book requires it, for every time you wheel by fours at the trot every pivot trooper must halt his horse and turn him on the forehand—provided the movement be rightly executed. And if the horse has been carefully supplied of quarter and neck and jaw, and taught to carry himself light in hand, and he be ridden collected, he can halt from the trot without having his jaws broken or his loins and hocks strained. It is with a view to such suppleness and easy han-

dling that I daily exercise every horse in the rank in this manner, for every horse must have his turn at the pivot.

2d. March backward and forward in line alternately and without halting between the movements.

I know no better exercise than this for suppling a horse in shoulder and quarter, teaching him to bring his four feet under him, and making him light in hand.

3d. Circle by fours to the right and left at the walk and the trot without halting in changing the direction of the wheel.

This, of course, is for the purpose of perfecting men and horses in wheeling by fours, and exercising them in the art of giving their whole attention to the drill. No man or horse can sleep in this movement and allow his fellows to lug him through it.

4th. Passage in line to the right and left at the walk, and at the trot and the canter when the horses are well enough trained—which they usually are not.

The necessity of this in shaping your line and moving your troop short distances to right or left is apparent, but in addition it affords the horse good exercise in discipline, and in obedience to leg and rein and heel.

5th. Raise and lower feet.

This exercise is laid down in the book as the "3d mounted exercise" (par. 310), but the good effect of it is there spoiled by requiring the trooper, after raising his feet as high as practicable to the rear, then to "raise the knees, keeping the feet in place until on a level with the ankle." Omitting this clause, and requiring the trooper to keep his knees and thighs clasped firmly on the horse, and his body perfectly still in the saddle, the exercise strengthens the muscles of the thighs, and exercises him in using his legs as an aid without deranging his seat or losing his stirrups.

6th. Close legs and heels.

A horse that will not allow the legs and spurred heels to close on him at the will of the rider without resenting it and kicking the troop to pieces is not fit to be in ranks. He has not learned good manners, and the legs cannot be used as aids with him. Few horses will stand the spurs until trained to do so.

7th. The bending lessons (D. R. 464-468).

The cavalryman that has become accustomed to riding a horse that carries his head and neck right, and whose jaw feels to the touch of the rein as if it were held by a steel spring instead of a steel bolt, will never be content to ride an unsupplied horse again. I give these exercises mounted only. The easiest and most effectual way to make a young horse arch his neck, and to supple his jaw and crest, is to give him a wide, shallow feed box, and fix it at such a height that he must lift his head and arch his neck to get his oats. Try this on your own horse, then stand off and watch him eat. You will see that five pounds of oats thus arranged will give him more bending and arching and suppling exercise than two hours of your own hard and patient labor can accomplish. It will also prevent him from bolting his oats.

8th. Turn on the forehand.

The Drill Regulations prescribe this exercise at the halt only; but since the pivot horse must halt and turn on his forehand, and resume the original gait whenever a set of four wheels correctly, I find it very useful to practise the horses in making these turns at the different gaits, resuming the original gait as soon as the turn is completed by every horse. I have never had much success in training troop horses to turn on the haunches; and as no troop movement depends upon it, I have never wasted much time upon it. I regard it rather as a high-school accomplishment.

If you have a horse that will not quit the rank without a fight with his rider, have him tied away from his fellows, if possible out of sight of them, day and night, until you break him of his exasperating habit. If persisted in long enough this will cure any young horse; but I have known it to take months. Old ones I fear are hopeless.

You want your horses to have three gaits only—the walk, the trot and the gallop (the canter, the maneuvering and the extended gallop being the same gait at different speeds). Without these gaits you cannot have a well-drilled troop, and to achieve them you must lay out a gaiting track (D. R. 481). The tendency among cavalry horses is to walk too slowly, trot too fast, and gallop too slowly. I have yet to see the officer that does not underestimate the speed of the trot until he has trained himself and his horse upon the gaiting track. Never allow a chief of platoon or a trooper to ride

his horse at the trot if you have ordered the gallop, or vice versa. If you have a horse that will not trot, that persists in cantering when he ought to be trotting, put him in the troop wagon and keep him there day after day until he learns to trot. If you have a lighter wagon to drive him in it will be better.

Of a truth, there is nothing that makes for a clean, smooth cavalry trot more than careful driving at a collected eight-miles-an-hour trot to a light wagon. You cannot hurt the efficiency of any horse in your troop by driving him carefully in light harness. But you must always drive him collected, and never speed him. He must not be allowed to go faster than eight miles an hour. Yet horsemen differ in their opinions on this point, and the driving of cavalry horses is a thing so easily abused that most commanding officers, very sensibly, will not permit it. Don't, however, hesitate to drive your own private horses, and make it a rule always to own two good ones. Daily driving, unless accompanied by daily use under the saddle, will lessen the speed of a horse's walk. Few horses used only in harness walk four miles an hour. Don't drive a saddle-horse to a heavy wagon—it will tend to stretch his muscles and pull him apart rather than to make him gather his feet under him and carry himself collected.

Endeavor to make your men cultivate the correct cavalry seat. Set them the example yourself. You will find that most of them, especially your old men, ride too long a stirrup. This is true in most of the troops of our cavalry. They ride the "tongs-across-a-wall" seat. Long stirrups are more comfortable, because less fatiguing to the leg upon an all-day march at the walk, walk, walk, and equally as comfortable at an easy canter; but for all other purposes and occasions they are an abomination in cavalry. I don't know where we got them, unless we inherited them from the old dragoons, who, I suppose, rode at the canter and the walk only. They are not for men who ride at the trot and manage their horses with the legs—hence they are not for the cavalry of to-day.

I don't, on the other hand, advocate a short stirrup, but one of the length prescribed in our Drill-Book, and in Dwyer's "Seats and Saddles," and in Carter's "Horses, Saddles and Bridles." Some of the practical objections to the long stirrup are as follows: The rider is not steady in the saddle—at

the trot he rocks from one side to the other with his feet stuck out, apparently in a desperate effort to reach the tread of his stirrups. In mounting with packed saddle he has difficulty in clearing the cantle-pack with his right leg. He cannot rise in his stirrups to reach out with pistol or sabre. He cannot grasp his horse with the knees and the inside of the thighs, and at the same time keep the feet parallel to the animal's sides and the heels depressed. When he takes a ditch or a hurdle, he usually loses one or both stirrups. His stirrups are of no use at all to him except in mounting and dismounting. He cannot use his legs and heels as aids without risk of losing his stirrups. And, lastly, it is not the modern cavalry seat—the seat prescribed by our Regulations.

I am glad that we are likely to have before long a bridle with double rein, but I should prefer the curb and snaffle to the bit with double rein. I have used, with considerable success in my troop, a sort of bit and bridoon, consisting of the curb-bridle with the watering bridle and halter. It is a clumsy makeshift, but it is better than either curb or watering bridle alone.

A leaping chute leading into your paddock would be an excellent thing, and you are lucky if you have a place where you can practice your horses at swimming. Horses can swim naturally, but they need practice to make them quiet and fearless in deep water, and it is very important that their riders should know how to handle them in deep water. The lack of this knowledge has cost the lives of a score or more of our cavalymen in the Philippines. And there is no diversion that the men enjoy more or take a greater interest in than swimming their horses. A swim may often be substituted for afternoon stables, on a hot summer's day, to the delight and profit of both men and horses.

To be of any practical use your horses must stand gun-fire both alone and in ranks. Every trooper should ride his horse habitually to the target-range; and the practice of firing blank cartridges at the picket-line and stables should be persisted in until all the horses stand it without flinching. Horses should not be ridden at pistol practice until they have been trained to stand fire.

* * * * *

P.S. In this and my former letters I have not undertaken to tell you all that I think I know about a troop of

cavalry, or all that you must know. Much you must learn by hard licks; some you may learn by reading books—but avoid becoming a desk-soldier. I have only mentioned a few points that I have proved by the test of practice, and found useful. I hope you may find them useful too.

Biñan, Laguna Province, P. I.

October 6, 1902.



THE FORT RILEY MANEUVERS.

BY COLONEL ARTHUR L. WAGNER, U. S. A., ASS'T ADJUTANT-GENERAL.



HE maneuvers recently held at Fort Riley, Kansas, are notable as the first attempt in the United States to carry out a course of tactical field exercises with a large command and to approximate, on a moderate scale, as nearly as the different conditions would permit, to the autumn maneuvers which have been universal in Europe since Prussia became the pre-eminent military power. These maneuvers are also remarkable as the first in which troops of the Regular Army and the National Guard were united in camp and field duties.

The Infantry and Cavalry School at Fort Leavenworth was the birth-place of systematic tactical field exercises in the United States Army. The course there inaugurated was afterwards adopted and carried out with success at the Cavalry and Light Artillery School at Fort Riley; but the force engaged in the exercises at the former school never exceeded a regiment of infantry, a squadron of cavalry, and a battery of field artillery, while those at the latter were limited to the troops and batteries stationed at the post, except on a single occasion when the garrison was reinforced with five companies of infantry which marched over from Fort Leavenworth. At Chilocco, Indian Territory, in 1889, two regiments of cavalry, fourteen companies of infantry, and two batteries of field artillery were assembled for maneuvers under Major General (then Brigadier General) Wesley Merritt, U. S. A. These maneuvers were very interesting and instructive, and furnished in some degree a prototype of those held at Fort Riley; but they were, from the conditions then existing, tentative in their nature, and were not repeated in succeeding years.*

The force assembled for the maneuvers at Fort Riley, September 24, 1902, consisted of the 1st and 2d Squadrons,

* For an interesting account of the maneuvers at Chilocco, written by General J. B. Babcock, A. A. G., see the JOURNAL OF THE MILITARY INSTITUTION for September, 1891.

4th Cavalry, the 1st and 3d Squadrons, 8th Cavalry, the 6th, 7th, 19th, 20th and 28th Batteries, Field Artillery, the 6th, 18th and 22d Regiments of Infantry, the 1st and 2d Infantry, Kansas National Guard, a foot battery of Kansas Artillery, and a provisional infantry battalion of the Colorado National Guard. One battalion of National Guard from Arkansas and two from Nebraska were expected, but the lack of a sufficient appropriation for transportation prevented them from appearing. Many officers of the National Guard of the various States were present as military observers, twenty-two States and Territories in all being represented. The regulars and militia were organized into a division of two brigades under command of Major General John C. Bates, U. S. A.; the first brigade, under the command of Brigadier General W. A. Kobbé, U. S. A., consisting of the regular infantry; the second, under the command of Brigadier General J. W. F. Hughes, Kansas National Guard, consisting of the two regiments of Kansas troops. The Colorado battalion was, in compliance with the request of its commanding officer, brigaded with the regulars. The Divisional Cavalry, consisting of the 1st and 2d Squadrons, 4th Cavalry, and the 1st and 3d Squadrons, 8th Cavalry, was under the command of Colonel C. C. Carr, 4th Cavalry, and the Divisional Artillery, consisting of the 6th, 7th, 19th, 20th and 28th Batteries, Field Artillery, was under the command of Colonel George B. Rodney, Artillery Corps. The force assembled aggregated about 6,000 officers and men.

The schedule of exercises, prepared by a board convened at Omaha before the troops assembled at the camp, provided for regimental, brigade and division drills, lectures on military operations and field engineering, the practical construction of specimens of the various shelter trenches, a field bridge and a pontoon bridge, and a course of eleven practical field problems in tactics. The program was entirely carried out, with the exception that the tactical problems were reduced from eleven to nine, owing to the persistently inclement weather.

The limits of this paper will not admit of anything more than a brief description of the tactical exercises, which were adapted to and limited by the means at hand. The best system of maneuvers is undoubtedly one in which large forces can be assembled at a considerable distance from each other,

each operating against its opponent in accordance with a general plan of campaign; the maneuvers consisting primarily of a strategical problem in which the tactical exercises are brought in as incidents to the general plan of operations. Such maneuvers furnish instruction of a practical military nature to everybody engaged therein, from the commanding general down to the newest recruit. They include the formation of military plans, the march of columns of the different arms under the conditions of actual warfare, the various features of the service of security and information, and the tactical employment of large bodies of troops on the field under most of the conditions of actual battle. But in forming any scheme of military maneuvers, it is necessary to consider not only what is desirable, but what is possible, and under the conditions existing in the United States the two questions of sufficient ground and suitable force cannot yet be answered in such satisfactory terms as to admit of autumn maneuvers on the European scale. The reservation at Fort Riley contains about thirty-six square miles, an area so small that it would not be possible to start an army from one corner of the reservation to operate against an army starting from the corner diagonally opposite without having the forces come in contact before the dispositions for the march could be completed. The cavalry screen, for instance, would habitually be at a distance in advance of the main army greater than the longest line that could be drawn within the Fort Riley reservation, and a half-day's march for infantry starting at one extremity of the reservation could scarcely be concluded before the command would find itself on private ground. If the opposing forces were to start from far distant points with a view to coming in contact on the reservation, the necessity of limiting their preliminary marches to the roads would destroy at once all the conditions that would attend the maneuvering of troops in time of war; and the unavoidable requirement of so directing the march as to cause the contact to take place upon a limited area known beforehand to each commander would deprive the preliminary movements of all strategical benefit. Under these circumstances, the only maneuvers practicable were such as could be conducted each day by opposing forces leaving camp in the morning and carrying out tactical exercises in which strategical features, from the nature of things, were necessarily reduced

to the barest minimum. Under such circumstances much must be assumed in the form of operations of imaginary large armies, for the purpose of furnishing a *raison d'être* for the operations of the actual forces supposed to be detached therefrom. Such imaginary conditions were in the main limited to the "general situation" of the problem. In some cases imaginary conditions were brought into the actual problem on the field, but were not in every case satisfactory. As a rule it may be stated that imaginary assumptions in the general situation are necessary, but they should not be considered in the actual operations of the troops on the field.

The force of umpires consisted of a chief umpire, a senior umpire for each of the opposing forces, and ten umpires distributed in each exercise in accordance with the instructions of the chief umpire. The rules regulating the conduct of the exercises were compiled mainly from those formerly in use at the Infantry and Cavalry School and the Cavalry and Light Artillery School. Some modifications were found necessary, but in general the rules formerly adopted at these schools were still thoroughly applicable. On the evening preceding each exercise, the commanders designated for the opposing forces reported to the chief umpire for instructions. Each was given the special situation for his side, with such information in regard to the general situation as he could reasonably be supposed to know from scouting and reconnaissance or from the course of the campaign in which he was supposed to be engaged. No information was given to either that could in any way give him an insight into the plan of operations of his opponent. A meeting of the umpires was then held in which the problem for the following day was discussed and the assignment of umpires was made for the different sides. Among the points specially insisted upon were the necessity of stopping the operations at any time when the forces were likely to come into actual collision, or so close as to bring about conditions which would not exist in war; to see that the commands were carefully inspected for ball cartridges before the exercise began; to render decisions as correctly as possible, but in all cases to make the decisions promptly, in order to avoid awkward pauses and "impossible conditions" in the conduct of the exercises. All officers engaged in the exercises were instructed, in orders from Division Headquarters, that the decision of an umpire must be accepted

immediately and without protest on the field, but that any objection taken to such decisions could afterwards be made in writing with a certainty of respectful consideration. The conditions of actual warfare were maintained to a striking degree, which is doubtless attributable to the fact that most of the officers engaged in these maneuvers had seen actual warfare, understood the value of tactical training, and were thoroughly in earnest. It is also gratifying to remark that the decisions of the umpires met with very few objections, and that these concerned only minor points. Whenever the troops approached so closely as to render collision imminent, or to bring about a condition involving firing at shorter ranges than would be possible in actual warfare, the signal was given, either by the chief umpire or by some umpire close to the critical point, "Cease firing, halt, attention." This call was at once taken up by the trumpeters all along the line, and the forces ceased firing and remained immovable until a decision could be rendered by the chief umpire. When it was decided to terminate the exercise a smoke bomb was sent up by the senior signal officer, who was habitually stationed in rear of the center of the Blue; and upon seeing this signal the commanding officer, of each regiment, squadron and battery immediately caused the recall to be sounded and marched his troops back to camp. A consultation of the chief umpire and the senior umpires of the opposing forces was then held on the field, this consultation being participated in by such of the other umpires as might be within reach at the time; but owing to the extent of the ground covered in most of these exercises it was rarely possible to assemble them all for the preliminary consultation. Immediately after returning to camp each umpire submitted his report to the senior umpire of the side which he accompanied. The senior umpires submitted these with their own reports to the chief umpire, who then submitted to the Adjutant General of the Division his own report, accompanied by those of his subordinates. As soon as practicable after the conclusion of the exercise, the officers of the Regular Army and the National Guard were all assembled in the large tent used for the general mess and assembly purposes, where the reports of the opposing commanders and the report and comments of the chief umpire were read. At the conclusion of the reading of these reports, remarks were invited; and

all officers who were engaged in the exercise were thus given an opportunity for such explanation as they might deem necessary to correct any error in the reports and comments or to throw further light thereon. This frequently furnished occasion for an interesting discussion on various tactical subjects connected with the maneuvers, and was, perhaps, one of the most valuable features of the encampment.

The tactical exercises carried out in the course of the encampment were as follows:

Problem No. 1, September 24, 1902.

GENERAL SITUATION.

An Army corps (Blue), consisting of two divisions moving north via Emporia and Junction City, has arrived at Fort Riley.

An opposing force (Brown), consisting of two corps, is moving south on "parallel" roads through Clay Center and Garrison.

The opposing forces are as follows:

BLUE, real, three regiments Infantry (including one battalion engineers), one squadron and three batteries. The rest of the corps is imaginary.

BROWN, real, one battalion, two squadrons, two batteries. The rest of the Brown force is imaginary.

The Brown is assumed to have a preponderating force of cavalry, so that the cavalry force of the Blue is restricted to patrolling, and is not able to make any aggressive reconnaissances to the front.

SPECIAL SITUATION.

BLUE.

The Corps Commander learns, through reconnaissance, of the near approach of the Brown force consisting of two army corps, one of which is reported advancing via Riley Centre and the Governor Harvey road, toward Vinton; the other via Keats upon Ogden or the Milk Ranch, or both.

The Commander of the Blue gives the following order:

HEADQUARTERS BLUE ARMY,

Fort Riley, Kansas, September 24, 1902.

Field Orders, No. 1.

I. The enemy is advancing from the north. His force consists of two army corps, and is apparently converging upon Fort Riley for attack. His scouts have been seen on the Governor Harvey road, and upon the Keats-Ogden road. It is probable that one corps is advancing toward Vinton and the other upon Ogden or the Milk Ranch, or both.

II. This command will assume a defensive position, with a view to protecting Fort Riley and awaiting further developments.

III. The defensive position will, unless orders be given to the contrary, be on the line of defense of the outpost.

IV. The outpost will be strengthened, and will be established with its line of defense extending through Morris Hill to such points on the right and left as will enable it to guard the Governor Harvey, Milk Ranch and Ogden roads.

V. The outpost will be under the command of Colonel Miner and will consist of:

6th Infantry,
18th Infantry,
1st and 2d Battalions, 22d Infantry,
1st Battalion Engineers,
2d Squadron, 4th Cavalry,
19th, 20th, and 28th Batteries, Field Artillery.

By command of Major General Blue:

James Greene,
Assistant Adjutant General.

Memorandum for the Commander of the Blue:

The outpost will be expected to be completely established by 12 M.

SPECIAL SITUATION.

BROWN.

The Brown commander learns of the presence of the Blue at Fort Riley. The strength of the Blue has been variously reported; the lowest estimate being one, and the highest three divisions. The position of the Blue has not been definitely ascertained further than that it is at Fort Riley. Instructions are given by the commander of the Brown for the First corps to move by the Governor Harvey road upon Vinton, and the second corps via Keats upon Ogden and the Milk Ranch. As a preliminary, the following order is given for a reconnaissance in force:

HEADQUARTERS BROWN ARMY,

Stockdale, Kansas, September 24, 1902.

Field Orders, No. 1.

I. The enemy is reliably reported to be at Fort Riley, in strength not less than one nor more than three divisions.

II. A reconnaissance in force will be made on the Governor Harvey road from Riley Center and on the Ogden and Milk Ranch roads from Keats, to develop the enemy's position.

III. The force from Riley Centre, will consist of the 3d Battalion, 22d Infantry, 1st Squadron, 4th Cavalry, the 7th Battery, Field Artillery, and will be under the command of Lieutenant Colonel Stedman, 4th Cavalry.

The force from Keats will consist of the 1st Squadron, 8th Cavalry, and the 6th Battery, Field Artillery, and will be under the command of Major Stanton, 8th Cavalry.

The two reconnoitering forces will unite near Fort Riley for their demonstration against the enemy's position.

By command of Major General Brown:

B. E. White,
Assistant Adjutant General.

Memorandum for the Commander of the Brown:

The forces designated for the reconnaissance will move out beyond the reservation line as soon as practicable after daylight. The force supposed to come from Riley Center will be on the Governor Harvey road, and the one supposed to come from Keats will be distributed on the Milk Ranch and Ogden roads. The attack upon the outpost will begin at 1 P.M.

Problem No. 2, September 25, 1902.

Advance Guard and Rear Guard.

For the Blue:

The 6th Infantry will march from the point where the One-Mile Creek is crossed by the Ogden road, along the said road to Three-Mile Creek, and thence to Wilson's Ranch.

The 18th Infantry will march from the Pumping Station along the Republican River bottom to the Governor Harvey road, and thence north to Estes' Gate.

The 22d Infantry will march from Fort Riley (at the Hay Sheds) through Pump House Cañon to Morris Hill.

The march will be assumed to be in a hostile country and all precautions will be taken accordingly. The march of each column from its designated station will begin at 9 A.M.

Upon reaching its objective, each column will halt one hour for luncheon, and will then take up its march to Fort Riley. The return march will be assumed to be a retreat in a hostile country, and the formation will be made accordingly.

The operations of these regiments will be totally distinct.

For the Brown:

Troop A, 4th Cavalry, will proceed to Wilson's ranch, and will move therefrom to harass and delay the march of a Blue column reported to be moving from Fort Riley via the Ogden road and Wilson's Ranch.

Troop B, 4th Cavalry, will proceed to Estes' Gate, and will move thence along the Governor Harvey road to harass the advance of the Blue column reported to be marching to Estes' Gate from Fort Riley.

Troop C, 4th Cavalry, will proceed to the vicinity of Morris Hill, and will move therefrom to harass the advance of a column reported to be marching from Fort Riley, via Pump House Cañon in the direction of Morris Hill.

The Brown troops will not begin their movement against the Blue forces earlier than 9.30 nor later than 9.45 A.M.

After the halt of the Blue columns for luncheon and the resumption of their march in retreat to Fort Riley, the troops of cavalry will, in each case, endeavor to harass and cut off the rear guard. This operation on the part of each Brown troop will not begin until after the opposing Blue column, including the rear guard, has fully

begun its march. During the halt of the Blue columns, the Brown detachments will withdraw out of sight for a similar halt.

The operations of these troops will be distinct, each one being concerned only with the problem specifically assigned to it above.

Memorandum:

The Brown troops are not to hurry along the route to seize a position, but are to take from the beginning all the precautions that would be observed in a march in a hostile country against a force whose location is unknown further than that it is marching on a certain road.

Problem No. 3, September 26, 1902.

Advance Guard and Rear Guard.

For the Blue:

A force consisting of the advance guard, real, of an imaginary division, will march from the Pumping Station along the Republican River bottom to the Governor Harvey road, and thence north to Estes' Gate. This column will be composed of the 6th Infantry, the 6th Battery, Field Artillery, Troop A, 4th Cavalry, and one platoon of Company A, Battalion of Engineers, and will be under the command of Major Morton, 6th Infantry.

A force constituting the advance guard, real, of an imaginary division, will march from Fort Riley (at the Hay Sheds) through Pump House Cañon to Morris Hill. This column will be composed of the 18th Infantry, the 7th Battery, Field Artillery, Troop B, 4th Cavalry, and one platoon of Company A, Battalion of Engineers, and will be under the command of Lieutenant Colonel Adams, 18th Infantry.

A force constituting the advance guard, real, of an imaginary division, will march from the point where the One-Mile Creek is crossed by the Ogden road, along the said road to Three-Mile Creek, and thence to Wilson's Ranch. This column will be composed of the 22d Infantry, the 28th Battery, Field Artillery, Troop C, 4th Cavalry, and one platoon from Company B, Battalion of Engineers, and will be under the command of Major Yeatman, 22d Infantry.

The march will be assumed to be in a hostile country and all precautions will be taken accordingly. The march of each column from its designated station will begin at 9 A.M.

Upon reaching its objective each column will halt one hour for luncheon, and will then take up its march to Fort Riley. The return march will be assumed to be a retreat in a hostile country, and a rear guard formation will be adopted accordingly.

The operations of these columns will be totally distinct.

For the Brown:

A force consisting of Troops D, E and F, 4th Cavalry, and two platoons of the 19th Battery, Field Artillery, will proceed to Estes' Gate, and move thence along the Governor Harvey road to harass the advance of a hostile column reported to be marching to Estes' Gate from Fort Riley. This force will be under the command of Captain Rivers, 4th Cavalry.

A force, Brown, consisting of Troops G and H, 4th Cavalry, Troop A, 8th Cavalry, and two platoons of the 20th Battery, Field Artillery, will proceed to the vicinity of Morris Hill, and will move therefrom to harass the advance of a hostile column reported to be marching from Fort Riley by way of Pump House Cañon to Morris Hill. This force, will be under the command of Captain Koehler, 4th Cavalry.

A force, Brown, consisting of Troops B, C and D, 8th Cavalry, one platoon of the 19th and one platoon of the 20th Batteries, Field Artillery, will proceed to the vicinity of Wilson's Ranch, and will move therefrom to harass and delay the march of a hostile column reported to be moving from Fort Riley to Wilson's Ranch. This force will be under the command of Lieutenant Colonel Stanton, 8th Cavalry.

After the halt of the Blue columns for luncheon and the resumption of their march in retreat to Fort Riley, the Brown forces will, in each case, endeavor to harass and cut off the rear guard.

The operations of these three commands will be distinct, each one being concerned only with the problem specifically assigned it above.

The movement of each of these three columns from the points designated against the Blue columns will not begin earlier than 9.45, nor later than 10 A.M.

The operations of the Brown against the retreating columns will not begin until after the Blue column, in each case, has fully begun its march. During the halt of the Blue columns, the Brown will withdraw out of sight for a similar halt.

Memorandum:

The Brown troops are not to hurry along the route to seize a position, but are to take from the beginning all the precautions that would be observed in a march in a hostile country against a force whose location is unknown further than that it is marching on a certain road.

Problem No. 4, September 27, 1902.

Advance Guard of a Division and Deployment of a
Division for Battle.

BLUE.

The entire force in the camp at Fort Riley, with the exception of two squadrons of cavalry and one battery of artillery, will march from the Pump House, by way of the Republican River bottom and the old Governor Harvey road, to Estes' Gate.

The composition of this force will be as given below:

The arrangement of the different organizations in order of march will be made by the commander of the column.

Advance Guard.—Company B, 1st Battalion of Engineers, 1st Squadron, 4th Cavalry (less one platoon, which will report to the Division Commander with the main body), 7th Battery and two guns of the 6th Battery, Field Artillery, 18th Infantry, two battalions, 22d Infantry, one non-commissioned officer, and the privates of the Signal Corps, one-half company of the Hospital Corps. The advance guard will be accompanied by two tool wagons and the Engineer train, six escort wagons for infantry ammunition, three escort wagons for picks and shovels, six ambulances.

Main Body.—The remainder of the Blue force, accompanied by all available escort wagons and ambulances not in excess of the proper proportion for such an organization, will constitute a portion of the main body of the Division, the rest of the main body and rear guard being imaginary.

The commander of the Blue, in case he encounters the enemy in force, will endeavor to effect a deployment on the high ground north or northeast of the ravine.

BROWN.

A force, consisting of the 2d Squadron, 4th Cavalry, 1st Squadron, 8th Cavalry, and 6th Battery, Field Artillery, opposes the Blue division. The officers will be instructed that this opposing force is supposed to consist of a division equal in strength to that of the Blue; this information to be communicated through the various grades to the enlisted men, so they will understand the nature of the operation.

The Brown force will leave camp on the Fort Riley reservation at such an hour in the morning as to enable it to be in position near the Governor Harvey road at the North Reservation line at 9 A.M. The Brown force will take up a position for defensive battle as nearly as practicable at the reservation line. The forces will be as widely extended as may be expedient, in order to indicate a larger force.

THE FORT RILEY MANEUVERS.

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Problem No. 5, September 29, 1902.

Contact of Opposing Forces.

GENERAL SITUATION.

A Western force (Blue), with headquarters at Abilene, Kansas, is operating against the Brown force advancing from the East. A division of the latter has reached Stockdale.

SPECIAL SITUATION.

BLUE.

Colonel Rodney is encamped on the Republican River bottom near the Race Track on the Fort Riley Reservation. His command is composed as follows: 6th Infantry, Battalion of Engineers, acting as infantry, 19th, 20th and 28th Batteries, Field Artillery, 1st Squadron, 8th Cavalry.

He receives the following order:

HEADQUARTERS BLUE FORCES.

Abilene, Kansas, September 28, 1902.

Field Orders, No. 1.

Colonel Rodney, with the troops under his command, now encamped on the Fort Riley reservation, will make a reconnaissance in force towards Stockdale, Kansas, to gain information in regard to the enemy reported in that vicinity, said to consist of all arms, about ten thousand strong. Colonel Rodney will move at 9 A.M. to-morrow, the 29th instant.

By command of Major General Blue:

A. R. Greene,

Adjutant General.

Memorandum for the Blue:

The line of march from Fort Riley will be via Hay Camp Springs.

SPECIAL SITUATION.

BROWN.

A Brown division of all arms is encamped near Stockdale, Kansas. Colonel Miller, commanding an advance brigade, is encamped on the upper part of Three-Mile Creek, near the Fort Riley reservation line. He learns that a small brigade of the enemy, all arms, was encamped at Junction City, Kansas, yesterday, and at this hour, 9 A.M., it is reported that the Blue force is moving via Fort Riley towards Hay Camp Springs. He decides to attack, and to capture the enemy if possible, or at least to drive him from his direct line of retreat through Junction City. He issues the following order:

HEADQUARTERS ADVANCE BRIGADE, BROWN FORCES.

Fort Riley Reservation, Kansas,

September 29, 1902, 9 A.M.

Field Orders, No. 1.

A Blue brigade of all arms is reported to be advancing through Junction City en route to Hay Camp Springs, this reservation. This command will move immediately to attack. If possible, the enemy will be driven from his direct line of retreat through Junction City. The enemy is reported to be especially strong in artillery.

By command of Colonel Miller:

R. L. Hamilton, Adjutant General.

Memorandum:

The Brown force consists of the following organizations:

18th Infantry,
22d Infantry,
6th and 7th Batteries, Field Artillery,
1st and 2d Squadrons, 4th Cavalry.

The Brown force will move from its position on Three-Mile Creek at 9.15 A.M.

Problem No. 6, October 1, 1902.

Attack and Defense of a Convoy.

GENERAL SITUATION.

An army (Blue) operating south-west from Salina, Kansas, with headquarters at that point, receives its supplies from Topeka as a base. The railroads are assumed to be broken up, and supply by wagon train is rendered necessary. One of the trains conducting supplies from Topeka to the army has encamped at Ogden.

A raiding force (Brown) has circled around the front of the Blue army and has appeared in the vicinity of Westgate Post Office, where its commander learns that the train, with its escort, has camped at Ogden. He makes his preparations to attack this train at some point on the Fort Riley reservation, with a view to inflicting upon it as much damage as possible.

SPECIAL SITUATION.

BLUE.

An army (Blue) operating south-west from Salina, Kansas, with headquarters at that point, receives its supplies from Topeka as a base. The railroads are assumed to be broken up and supply by wagon trains is rendered necessary. One of the trains conducting supplies from Topeka to the army is encamped at Ogden, where the commanding officer of the escort learns that there is a large hostile raiding force at some point south of the Kansas River, not many miles away, the exact location unknown. He makes the ordinary preparations for guarding his train in its progress. He finds that the direct road to Fort Riley, after crossing Three-Mile Creek, is in an impassable condition; he accordingly proceeds along the Ridge Road.

The Blue force is as follows:

6th Infantry,
22d Infantry,
7th Battery, Field Artillery,
Troops A and B, 4th Cavalry.

The Blue force is at the point where the Ogden road crosses Three-Mile Creek; the time of starting 9 A.M.

The wagon train is supposed to consist of 180 wagons, moving in single column, the line of wagons being two miles long. In reality it consists of all the wagons available at Fort Riley, as well as the caissons of the batteries not employed in the exercises.

The commanding officer of the escort has orders to arrive at his destination with the least possible delay, as the stores are much needed by the troops at the front.

SPECIAL SITUATION.

BROWN.

An army (Blue) operating south-west from Salina, Kansas, with headquarters at that point, receives its supplies from Topeka as a base. The railroads are assumed to be broken up and supply by wagon train is rendered necessary. One of the trains conducting supplies from Topeka to the army is encamped at Ogden.

A raiding force (Brown) has circled around the front of the Blue army and has appeared in the vicinity of Westgate Post Office, where its commander receives information of the presence of a Blue convoy at Ogden. He accordingly makes preparations for attacking it at some point on the Fort Riley reservation. He has ascertained from his scouts that the direct road from Ogden to Fort Riley is impassable between the Three-Mile Creek and the immediate vicinity of Fort Riley, and that the train cannot take that road.

The Brown force consists of:

Troops C, D, E, F, G and H, 4th Cavalry,
1st Squadron, 8th Cavalry,
One platoon, 6th Battery, Field Artillery.

The actual starting point of the Brown force is the Pump House, Republican River flat. The time of beginning the movement 9 A.M.

Problem No. 7, October 2, 1902.

Outpost Exercise, Regulars and National Guard.

This will consist of three separate exercises, each embracing the employment of a regiment as an outpost for an imaginary larger command. A regiment of regulars will, in each case, establish the outpost, the officers of the National Guard accompanying the commander as spectators. Each outpost will, as soon as it is completely established, be relieved by a National Guard regiment. When the National Guard outposts have been established, an outlined enemy, consisting of a small force of regular troops, will simulate an attack, and the outposts will make the necessary preparations for defense.

Blue: 6th U. S. Infantry and 1st Infantry, K. N. G., will establish an outpost on the Republican River bottom.

18th U. S. Infantry and 2d Infantry, K. N. G., will establish an outpost in the vicinity of Morris Hill.

22d U. S. Infantry and Colorado Battalion will establish an outpost on the Smoky Hill bottom.

The position of the outpost will, in each case, be determined by the commanding officer of the Regular regiment, who will also point out the assumed location of the main body, which the outpost is covering.

Brown: Troop E, 4th Cavalry, will proceed to a position on the Republican River bottom—if practicable concealed from the view of the outpost—and when notified by the umpire that the outpost is established, will proceed to make an attack upon it.

Troops F and G, 4th Cavalry, will proceed to the vicinity of Morris Hill and Smoky Hill bottom, respectively, and will act in regard to the outposts there established as prescribed above for Troop A, 4th Cavalry.

Memorandum:

As this exercise is especially for the instruction of the National Guard, great care will be taken by the commanding officer of the outpost to explain concisely the essential functions of its component parts and the manner in which the attack will be received. It will also be explained that the Brown force is supposed to be larger than it is, and indeed much larger than the outpost. The Brown will make a direct attack upon the outpost, so that an illustration of the formation of the latter for defense may be plainly given.

The designated infantry organizations will leave camp at 8 A.M.; the designated cavalry at 9.30 A.M.

Problem No. 8, October 6, 1902.

Attack and Defense of a Position.

GENERAL SITUATION.

A Western force (Blue) is operating against an Eastern force (Brown) to the north-east of St. Mary's, Kansas. The Western force relies upon the Union Pacific Railroad for supplies. The main Blue force beyond St. Mary's has met with a serious reverse and has been temporarily thrust off its line of direct communication with Fort Riley.

SPECIAL SITUATION.

BLUE.

Major Leach is guarding the important depot of supplies at Fort Riley. Owing to the serious check of the main Blue force beyond St. Mary's, assistance from other detachments cannot be counted on. A strong force of Browns, composed of all arms, is reported to be advancing via Stockdale upon Fort Riley. The force at Fort Riley is as follows:

6th Infantry,
1st Battalion of Engineers (acting as infantry),
Troop A, 8th Cavalry,
6th and 28th Batteries, Field Artillery.

The commanding officer strengthens his position with hasty intrenchments. One-Mile Creek is supposed to be an impassable river, and the ground east of the creek, as far north as the reservation line, to be rugged and impracticable for the operation of troops. The Blue will be in position at 7 A.M.

SPECIAL SITUATION.

BROWN.

A force of Blues which relies upon the Union Pacific Railroad for supplies has met with a serious reverse near St. Mary's, and has been temporarily thrust off its direct line of communication with Fort Riley. Availing himself of this situation, the commanding officer of the Brown determines to send a force to seize the important depot at Fort Riley. One-Mile Creek is supposed to be an impassable river, and the ground east of the creek, as far north as the reservation line, to be rugged and impracticable for the operations of troops.

HEADQUARTERS BROWN FORCES.

Avoca, Kansas, October 2, 1902.

Field Orders, No. 1.

Distribution of troops:

18th Infantry,
22d Infantry,
1st Kansas National Guard,
2d Kansas National Guard,
Colorado Battalion,
1st and 2d Squadrons, 4th Cavalry,
Troops B, C and D, 8th Cavalry,
7th, 19th and 20th Batteries, Field Artillery.

I. The important depot at Fort Riley, Kansas, and the communications of the enemy between Republican River bridge near Junction City and Ogden appear to be weakly guarded.

II. General Kobbé will seize Fort Riley, destroy the stores at that point, and disable the Union Pacific Railroad sufficiently to prevent trains passing for several days.

By command of Major General Brown:

B. E. White.
Adjutant General.

Memorandum:

The Brown force executing the above order is assumed to have arrived at the Milk Ranch on the evening of October 5th. The march in carrying out the problem will actually begin from that point at 9 A.M., October 6th.

If, as is probable, the Kansas regiments be not available on Monday, the 6th instant, for this exercise, the attacking force will be assumed to be stronger by two full regiments than it really is. This assumption is made in order to obviate a possible misconception as to the practicability of attacking a force in a selected and prepared position without a great superiority of troops. Even with this assumption the attacking force is far from being too large.

Problem No. 9, October 7, 1902.

GENERAL SITUATION.

A division (Blue), moving north on Stockdale, crosses the Republican and Kansas rivers at Fort Riley.

A division (Brown) of inferior strength has taken up a position for defensive battle near the north reservation line covering the Governor Harvey, Milk Ranch and White's Ranch roads, awaiting reinforcements from Stockdale and Riley Centre.

SPECIAL SITUATION.

BLUE.

A Blue division, moving from the south upon Stockdale, has crossed the Republican and Kansas rivers at Fort Riley. The Blue commander learns that a division of Brown, consisting of two brigades, with artillery and cavalry, has taken up a defensive position near the north reservation line covering the Governor Harvey and Milk Ranch roads. He moves forward to attack the Brown division with a view of defeating it before it can receive reinforcements. The road from Ogden to One-Mile Creek is assumed to be impassable.

SPECIAL SITUATION.

BROWN.

A Brown force moving south is approaching the Fort Riley reservation. North of the reservation it receives information that a Blue division of superior strength has succeeded in effecting the passage of the Republican and Kansas rivers at Fort Riley. Its commander gives orders to take up a position for defensive battle near the north reservation line while waiting the arrival of reinforcements from Riley Centre and Stockdale. The road from Ogden to Fort Riley is assumed to be impassable.

The Blue force consists of all the forces at Fort Riley, Regular and National Guard, excepting the 1st and 2d Squadrons, 4th Cavalry, the 6th Battery, Field Artillery, and the 3d Battalion of the 22d Infantry, which will compose the Brown force.

The troops will leave camp so as to be in position for beginning the movements prescribed in this exercise at 1 P.M.

The position of the Brown will be outlined so as to represent a force of two brigades.

It will be observed that all orders supposed to emanate from the headquarters of the imaginary large commands are in the name of fictitious commanders and signed by supposititious adjutants-general; while those really given by commanders to troops employed in the maneuvers are issued by actual authority and signed accordingly. This was deemed necessary in order that the imaginary conditions of the general situation might not be confused with the real circumstances

of the problem or confounded with the actual records of the Maneuver Division.

The limits of this article do not admit of a detailed description of the manner in which these exercises were conducted. Of the different problems, the most interesting were the fifth, sixth and eighth, involving, under different conditions, the contact of opposing forces. The tactical handling of the troops was, with very few exceptions, excellent, the experience of most of the officers in actual warfare being evident in the handling of their troops in the maneuvers. The action of the cavalry in scouting, reconnaissance, retarding the advance guards and assailing the rear guards approached in most cases, almost to perfection; and in the entire course of tactical problems only two serious errors were made by cavalry commanders. In the sixth problem the commander of one of the squadrons hurled his four troops successively in a frontal charge, against intact infantry or dismounted cavalry thoroughly prepared to receive the attack, with the result that the four troops were ruled out of action. On another occasion, a captain of cavalry undertook, with two dismounted troops, to carry, by frontal assault, intrenchments held by a superior force of intrenched infantry, with the result that his command was ruled out also. With these exceptions the handling of the cavalry was practically without a flaw; and it is to be remarked that the two officers committing these errors were men of extended field service and recognized ability, whose work in the maneuvers was otherwise extremely creditable and in thorough keeping with their actual war service. These occurrences were, in fact, of a nature to remind one of the remark attributed to the great Napoleon, "Show me a general who has never made any mistakes, and I will show you a general who has never made war."

The field batteries were handled in the maneuvers with a degree of skill for which the artillery of Fort Riley has long been noted. They seemed almost to demonstrate the possibility of a battery being able to go wherever a single horseman could gallop, and their celerity of movement was one of the marked features of the exercises. The ranges were habitually ascertained with the Weldon range finder, being checked when possible by the travel of sound. In every case it was assumed that shrapnel with percussion fuses were fired with

the first two shots, time fuses being then used. The mountain battery was used with the field batteries in all of the exercises, though owing to the many features in which it differed from the field batteries such use would hardly have been practicable in sustained operations. In order to avoid a misconception of the use of the mountain battery on the part of the troops engaged in the maneuvers, the following comments by Major M. M. Macomb, Artillery Corps, one of the umpires, were read to the assembled officers:

"In regard to the employment of a mountain battery together with field batteries, some comment should be made in order that no mistake should arise as to the propriety of doing so in actual war. As a matter of fact, their rôles are entirely different: one is suitable to open country like this reservation, and the other to mountain regions where wheeled vehicles cannot go, and where transportation must be by pack animals. The gun itself is no match for our field piece, which has four times the power of the Vickers-Maxim, due mainly to the greater initial velocity of the 3.2 $\frac{1}{2}$ inch gun. The mountain battery cannot maneuver with the field batteries, due to the fact that the latter can move for long distances at a trot or a gallop, while the other must confine itself to a walk. It is not denied that on occasions a mountain battery can be brought into action at a quick trot, when thoroughly drilled and properly equipped, and that the guns can be put in action within a minute after the command 'unpack' is given; but this is slow work compared to what a light battery can do. The maneuvering gait for a mountain battery is a walk similar to that of a pack train, and the trot would never be taken except in cases of dire necessity. As a matter of fact there is practically no place on this reservation where a light battery cannot be taken, and a mountain battery will do pretty well to go where our light batteries have been. In a close country with steep mountain trails unsuitable for wheeled vehicles, and where only pack transportation can be used, the mountain battery finds its true function. It is a mistake also to attempt to use draught for these guns. As a matter of fact this can only be done over the main roads, like those about this post or from here to Junction City, in good weather. It is poor policy to try to drag the gun over heavy roads, as under these circumstances it becomes a 'mule killer.' Hence it hardly seems worth while to pack along the unwieldy shafts for the sake of drawing the guns for a short distance over a macadamized road. In other words, the shafts are an unnecessary encumbrance for an American mountain battery, and the commander did well to leave them in camp. A mountain battery should never be placed in a

battalion with a light battery, as under no circumstances can the commanding officer of the light batteries handle it with them; due to its entirely distinct and special rôle, and the fact that it would be an encumbrance to the rapid handling of his command."

The defects in the handling of the infantry were so few and so slight as to make comment almost unnecessary. It was observed that there was a frequent tendency to use volley firing at small and rapidly shifting targets when a fire at will would have produced better results; and a general tendency was noted on the part of infantry rear guards to halt too long for the purpose of fighting, when their object should have been merely to compel the enemy to deploy for action, and then to resume their march with as little delay as possible, so as to avoid being separated by too great a distance from the main body.

In Problem No. 1, the march of a command consisting of three regiments of infantry, one squadron of cavalry and three field batteries, three miles, and their complete establishment as an outpost covering a front of four miles, in less than two hours and a half was very creditable, especially as the roads were muddy and the ground so heavy as to make rapid movements difficult.

Problem No. 8 was, perhaps, the most interesting, and was certainly the most instructive of the entire course. The conditions of the problem required the Blue force to occupy its position two hours before the time designated for the forward movement of the Brown to begin; the Blue commander being ignorant, however, of the hour set for the attack. Before the Brown force, which attacked promptly at the fixed time, made its appearance, the Blue was thoroughly intrenched in kneeling trenches, the artillery in gun pits, the fresh earth being carefully covered with cut grass. The intrenchments consisted of a series of detached trenches, echeloned back from the right, which rested on One Mile Creek, to the left, which rested on the Republican River near the trolley bridge. Each trench was about fifty yards long, excepting one twice that length to the west of the Morris Hill Road, and was in the form of an arc of large radius, convex to the enemy's view. The pits were so constructed as to permit a fire either to the right, front or left, the conformation of the trench being such that if the enemy should gain a position so as to enfilade one flank of the intrenchment, he could be opposed directly

in front by troops occupying the other half. With this object in view, each trench was twice the length necessary to shelter the troops occupying it. Additional gun pits were constructed on the right so as to admit of shelter for guns that might be sent up to reinforce the artillery stationed there. The most striking lesson of the entire exercise was found in the invisibility of the intrenched infantry. In several cases the Brown forces were under a heavy fire before they were aware of it. In actual battle they would doubtless have been made speedily aware of this fact, but the first information received by them of the dangerous proximity of the intrenched enemy would, probably, have been in the form of ruinous losses. The great advantages accruing to the defensive by the introduction of smokeless powder were very strongly exemplified in this exercise, and fully bore out the conclusions drawn from our own experience in the Santiago campaign, and by that of the British in South Africa. Officers who had served in the Santiago campaign and in the Philippines were well aware of the invisibility of intrenched infantry, using smokeless powder, in a country covered with tropical undergrowth, but it was a revelation to most of the officers engaged to observe the degree of invisibility that could be given to the intrenched infantry in the open rolling country of the Fort Riley reservation. In the language of one of our officers, this exercise "sent everybody back to camp a-thinking."

The exercise which seemed next in point of interest was the problem of attack and defense of a convoy. In this exercise all the transportation that could possibly be obtained at Fort Riley was pressed into service as part of the train, all work requiring the use of wagons being suspended for this purpose. The train was thus formed of 87 wagons and 21 pack mules. It is interesting to note that notwithstanding the amount of campaign service that has fallen to the lot of most of our officers, but few of them had ever participated in either the attack or defense of a large convoy. Much interest was accordingly shown in regard to the conduct of both the defending and attacking forces, and a tactical object-lesson of much value was conveyed by the problem.

The work of the Signal Corps at the maneuvers was quite in keeping with the record of that corps for energy and efficiency. Its work demonstrated the power of the Signal

Corps to accompany an advance guard or rear guard and keep the main body in constant communication. In the advance guard problem, three parties, each consisting of a non-commissioned officer and ten men, were attached respectively to the three columns. They started simultaneously with the movement of the troops and kept in constant touch. They built lance pole lines, and in one case made an ingenious use of a barbed wire fence for about a mile. There were no interruptions of the line whatever. On the retreat the detachments followed in rear of the column and cut in instruments, reporting to Division Headquarters each attack of the opposing forces. The electrical instrument used was the type "D" Signal Corps buzzer, and it worked perfectly with the Morse alphabet and as a telephone. In the eighth problem all salient points of the defensive line and one far in advance were well connected by telegraph lines. A detachment of two officers and sixteen men provided with two wagons, established and maintained buzzer lines and eight stations; two of these were at the reserve, five were distributed along the front of the defense, and one was established by a sergeant and a private two miles to the front, the wire being completely concealed. These two men hid themselves close to the headquarters of the Brown forces, and from there reported the movements of the enemy. The enemy's lines in moving to the front passed over them without discovering them. The telephone was used to good effect in reporting the advance of a strong force of Brown infantry approaching the valley on the extreme left of the Blue line, the report being received in time to enable all dispositions to be made to receive the enemy.

Dressing stations and field hospitals were established by the Medical Corps in all the exercises. These stations and hospitals were in every case admirably located at points well sheltered and easy of access from the front. The experiment was made of giving to men ruled out of action "diagnosis tags," setting forth the nature of their supposed disability. Though this was intended as a means of giving experience to the men of the Hospital Corps in the care of wounded on the field, the experiment was not a satisfactory one; for the umpires were too busy in watching the various phases of the tactical movements to be able to bestow the necessary attention to the experiment of diagnosis tags,

and officers and men alike were disinclined to consider the matter seriously.

The comparative invisibility of the khaki uniform was noticed in a striking degree in all the exercises, the Blue forces being much more easily located than their opponents, and their movements being much more plainly perceptible. In only one case was the khaki uniform of any marked degree of visibility. This was in the eighth problem, when the Brown force was, from the nature of the terrain, compelled to move over some slopes or swales, the sun shining brightly and directly in their front. In this case the khaki uniform presented a peculiar whitish appearance and was very plainly visible. It was noticed, however, on this occasion, that one or two uniforms of the shade recently adopted by the Uniform Board did not seem to be affected in this manner by the strong sunlight.

The sword was duly anathematized in every maneuver that was held on a clear day. In many cases the first indication of the location of the opposing force was given by the flashing of a bright scabbard in the sunlight. This was a matter of general remark, and caused many officers to question why, in the present stage of warfare, they are required to carry a weapon which has not a single element of practical utility to compensate for its capacity for betraying the presence of those who wear it. In fact, the sword is a picturesque adjunct for mysterious officials of secret societies, a convenient and comparatively harmless weapon for the duellists of German universities, and a darling accessory for a dramatic star; but in the hands of military men, under the existing conditions of warfare, it is simply an antiquated nuisance, retained solely because of sentiment and conservatism that might as well retain the cuirass, the morion or the spontoon.

The success of the maneuvers was made manifest by the many expressions of satisfaction heard from the most experienced and capable officers engaged therein. The remark was frequently heard that everybody had learned something; and indeed an officer must have been either a paragon of military inspiration and professional attainments or a hopeless case of soldierly incapacity to have passed through the course of tactical problems without gaining some food for military thought or some valuable addition to his store of practical experience in handling troops. The officers of

higher rank had an opportunity to exercise, in these maneuvers, the command of larger bodies of troops than could be assembled at their own posts, and to exercise such command, in *tactics* instead of *drill*, under circumstances approaching very closely to those of actual war. To the younger officers the mere fact of seeing and being a part of a large force of all arms was in itself a valuable experience, aside from the part they were required to take in the handling of troops in tactical operations; and all officers gained more or less from the interchange of military views inseparable from an association of different organizations with each other for a number of days in a course of active military work. Though the force assembled was, in comparison with those brought together in the autumn maneuvers of Germany or France, very small, it was a large one in comparison with our ordinary garrisons; and though experience in handling 6,000 men may not qualify an officer for the command of an army of 100,000, it will surely fit him for such a high responsibility better than if his experience had been limited to handling a few companies or a single squadron.

There were many other features of the maneuvers which it might perhaps be interesting to consider, but limited space precludes a more extended discussion. I cannot close this article, however, without commenting upon a report which appeared in the newspapers, and which, I am sorry to see, was copied seriously in one of our service journals, that the Kansas National Guard left the camp and returned home before the conclusion of the maneuvers, on account of the rain. No statement could possibly be more unjust to a deserving body of troops. The Kansas regiments left camp at exactly the time fixed before they left home. Although the weather during a great portion of the maneuvers was execrably vile, the Kansas troops, so far as I was able to learn, took their discomforts without a murmur, and they performed their duties earnestly and faithfully. They kept their camp in an excellent condition, and when they departed they left behind them one of the cleanest camps ever abandoned by troops. It may be added that they took with them the respect and good wishes of all with whom they had been associated in the encampment.

ON SOME MILITARY TESTS OF HYDRAULIC CEMENTS.

BY JAMES E. HOWARD, C. E., ENGINEER OF TESTS,
WATERTOWN ARSENAL, MASS.



TESTS are in progress at the Watertown Arsenal on certain of the physical properties of cements, employing a number of representative brands, which are exposed to different conditions of treatment. The tests are of an investigative nature, attention centering upon features associated with, or explanatory of, the principal functions of a cement, inaugurating the work along certain fundamental lines of inquiry.

The experiments began with determinations on the

FINENESS OF GRINDING.

Observations were made upon Portland, Natural and Slag cements, carrying on the tests by the ordinary methods of sifting, and also by means of an air blast. The sieves employed ranged between the limits of Nos. 100 to 200 mesh wire-cloth sieves and a No. 20 bolting cloth. There was a special sieve prepared by electro-plating a fine brass wire cloth, thereby reducing the dimensions of the openings until they measured only about $\frac{1}{1000}$ inch each.

It is a very slow operation to use this plated sieve, and the practical limit of fineness is reached with openings in the vicinity of $\frac{1}{1000}$ inch. Finer grades may be separated by means of a current of air directed against the material after it passes through a fine sieve, a winnowing device, and collecting the cement which settles at different distances from the sieve. In this manner sufficient material for experimental purposes may be obtained in sizes of grains about $\frac{1}{1000}$ inch diameter and finer.

Referring to the sizes of the grains, instead of the number of the meshes of the sieves employed, the relative proportions of material of different sized grains was found as follows:

FINENESS OF CEMENTS, FOUND BY SIFTING.

| Brand. | SIZE OF GRAINS. | | | | |
|---------------|-----------------|----------|----------|----------|-----------|
| | ".0058 | ".0050 | ".0034 | ".0027 | ".0027 |
| Atlas | % 11.2 | % 3.8 | % 9.1 | % 6.6 | % 69.3 |
| Alsen | 19.3 | 5.7 | 7.9 | 8.2 | 58.9 |
| Steel | 2.8 | | | 9.1 | 88.1 |
| Hoffman | 14.1 | 1.9 | 6.4 | 12.5 | 65.1 |
| Norton | 12.5 | | | 17.5 | 70.0 |

The Portlands sift more readily than the Natural cements, the shape of the grains favoring the former, while with the latter, finer particles tend to adhere to the coarser grains which present a flocculent appearance when viewed microscopically. Although several grades were sorted, it would be sufficient for most purposes to group the material into two sizes, and include all that is coarser than ".0027 diameter of grain in one class, and all which is finer in another class. This line of demarcation suggests itself merely because it corresponds to the grading done with the finest bolting-cloth sieve. Otherwise it would probably be desirable to classify at a finer size of grain.

The coarser class, taken by itself, does not display much strength as a briquette. Its cementing value is very low for a given bulk of material. However, chemical action goes on similar in kind to that which takes place in the finer grains, and this action may be found with cement grains much coarser than above tabulated. Portland cement clinker will hydrate, as shown by its behavior, which, after mixing with water and exposure for a time to the air, effervesces when treated with hydrochloric acid, disengaging CO_2 , which is taken to indicate that the clinker, at least superficially, has hydrated and passed to a carbonate. It is quite another question to answer whether this coarse stuff is beneficial or detrimental to the material as a whole, but it certainly is not inert.

Comminution facilitates chemical reactions, and the finer grains are therefore in a favorable condition for prompt change of state. The query presents itself, whether concurrent action takes place in grains of different sizes. Efforts have been made in this direction, and some information has been gained. And then, in regard to the intensity of the cementing forces, although the strength per nominal unit of area may be low, still the actual

unit stress must be higher on account of the imperfect contact or the presence of voids in the material, and we can on the other hand conceive of the development of internal forces tending to disrupt the cement after partial setting, through local changes in density. Data bearing on this subject is shown in the specific gravity determinations.

As to the strength of the cement finer than ".0027 diameter of grain, the results of the tests which have been made are less conclusive than hoped for. The general strength of the unsifted material from the barrel was equal to the strength of the finer grains taken alone, and instances of an exceptional display of strength did not occur by chance or otherwise in the finest material. Making liberal concessions for the influence of personal equation, if unusual strength resides in the finest grains, some of the test pieces might have been expected to display it. For the present it becomes necessary to say that the finest grades obtained by the winnowing of sifted material did not furnish an example of extraordinary strength.

SPECIFIC GRAVITY.

The determinations on the loose material were made with a Schumann Volumeter, using benzine as the liquid for receiving the cement. Some of the values obtained on material from the barrel were as follows:

| Brand. | Class. | Specific Gravity. |
|----------------------------|----------|-------------------|
| Alpha | Portland | 3.11 |
| Atlas | " | 3.09 |
| Storm King | " | 3.07 |
| Alsen | " | 3.08 |
| Steel | Slag | 2.74 |
| Hoffman | Natural | 3.06 |
| Newark and Rosendale | " | 3.06 |
| Norton | " | 3.03 |
| Mankato | " | 2.93 |
| Obelisk | " | 3.12 |

It will be observed that the values for some of the Natural cements are not materially different from the Portlands. The Slag cement shows a lower value.

It is known that loose cement, upon exposure to the air, loses in specific gravity. A sample of Whitehall Portland, 14 days after grinding, had the value 3.13, which became after 28 days' exposure in the air, 3.09. The material from a barrel of Norton cement about 10 years old had the specific gravity 2.82.

After hydration the loss in specific gravity is more pronounced, as shown by the following table, in which the results are given on reground material from tensile briquettes for a number of cements which had been mixed neat and set in air and in water.

| Brand. | Class. | Specific Gravity | |
|-----------------|----------|------------------|---------------|
| | | Set in air. | Set in water. |
| Alpha..... | Portland | 2.67 | 2.52 |
| Atlas..... | " | 2.66 | 2.55 |
| Star..... | " | 2.61 | 2.58 |
| Dyckerhoff..... | " | 2.72 | 2.68 |
| Hoffman..... | Natural | 2.75 | 2.62 |
| Norton..... | " | 2.69 | 2.58 |
| Obelisk..... | " | 2.75 | 2.76 |

Fineness of grinding influences the results with hydrated material, the finer grains displaying greater promptness in the acquisition of lower values, and retain this distinction for a number of days at least, as shown in the following table:

| Brand. | Size of grain. | Specific Gravity. | | |
|------------|----------------|---------------------|-------------------|---------------|
| | | Original condition. | Mixed 30 minutes. | Mixed 5 days. |
| Star..... | Inch. | | | |
| | >.0058 | 3.09 | 3.04 | 2.94 |
| | .0027 | 3.12 | 3.06 | 2.89 |
| | <.0027 | 3.04 | 2.72 | 2.68 |
| Alsen..... | >.0058 | 3.07 | 3.02 | 2.92 |
| | .0027 | 3.09 | 3.05 | 2.89 |
| | <.0027 | 2.99 | 2.81 | 2.37 |

Heating hydrated material to a temperature of redness effects a restoration in the specific gravity. This is illustrated in the following table on reground material taken from tensile briquettes which set in air:

| Brand. | Specific Gravity. | |
|------------------|----------------------------|---------------------------|
| | Before heating to redness. | After heating to redness. |
| Alpha | 2.67 | 3.11 |
| Atlas | 2.66 | 3.17 |
| Storm King | 2.78 | 3.15 |
| Alsen | 2.60 | 3.10 |
| Hoffman | 2.75 | 3.13 |
| Norton | 2.69 | 3.11 |

The results thus far given have referred to the loose or powdered material, in the state taken from the original package, or in the case of hydrated material, after it had been reground to a fine powder. Some results will now be introduced on the specific gravity of the hydrated material in the cake, parts of briquettes or cubes. These determinations were made by means of a chemical balance, weighing in air and in water, and making the necessary corrections for water absorbed when immersed.

| Brand. | Sp. Gr. | Remarks. |
|------------------|---------|--|
| Alpha | 2.23 | From briquettes which set in air. |
| " | 2.29 | " " " " water. |
| Dyckerhoff | 2.11 | " " " " air. |
| " | 2.07 | " " " " water. |
| Hoffman | 1.65 | " " " " air. |
| " | 1.66 | " " " " water |
| Atlas | 1.92 to | } Material from 12" cubes. } $\frac{1}{4}$ of a 2" cube set in air. |
| " | 2.17 | |
| Star | 2.18 | " " " " |
| Alsen | 1.98 | " " " " |
| Hoffman | 1.62 | " " " " |
| Obelisk | 1.66 | " " " " |

The difference between the specific gravity of the material in the cake and the reground hydrated material is an index of the voids which were in the briquettes and cubes. The amount of water used in mixing the material of the briquettes and cubes was sufficient to make a plastic paste of suitable consistency for use as a rather dry mortar, and then tamping the same into molds. Denser cakes could be obtained by the use of less water in the mixture, accompanied by vigorous tamping in the molds, while grouts display less density of structure than ordinary mortars.

AMOUNTS OF WATER AND CARBON DIOXIDE PRESENT IN THE
HYDRATED MATERIAL.

Determinations of the loss in weight when heated and the amounts of water and carbon dioxide driven off, were carried on in conjunction with the specific gravity determinations of the material.

Cement fresh from the barrel loses but little in weight upon heating to redness; after a number of days' exposure to the air the loss is greater, increasing with prolonged exposure. The loss with hydrated material, always considerable, is influenced by the circumstances attending its previous treatment.

TABLE SHOWING LOSS OF WATER AND CARBON DIOXIDE ON HEATING TO REDNESS MATERIAL PREVIOUSLY DRIED AT 110 DEGREES C. REGROUND MATERIAL FROM 2-INCH CUBES WHICH WERE SET IN AIR AT DIFFERENT TEMPERATURES.

| Brand. | Class. | Description. | Loss on heating to redness. | |
|---------------------|----------|----------------------|-----------------------------|----------------------|
| | | | H ₂ O % | CO ₂ % |
| Star | Portland | Set in air at 70° F. | 1.68 | 7.00 |
| | | " " 36° F. | 5.02 | 4.90 |
| | | " " Zero F. | 3.52 | 3.60 |
| Alsen | Portland | Set in air at 70° F. | 3.23 | 6.73 |
| | | " " 36° F. | 7.68 | 3.80 |
| | | " " Zero F. | 3.88 | 3.20 |
| Austin | Natural | Set in air at 70° F. | 1.76 | 6.08 |
| | | " " 36° F. | 4.12 | 6.00 |
| | | " " Zero F. | 1.92 | 3.00 |
| Bonneville improved | Natural | Set in air at 70° F. | 4.12 | 11.98 |
| | | " " 36° F. | 5.96 | 10.00 |
| | | " " Zero F. | 6.70 | 6.90 |
| Hoffman | Natural | Set in air at 70° F. | 3.04 | 8.00 |
| | | " " 36° F. | 3.40 | 8.00 |
| | | " " Zero F. | 5.35 | 3.77 |

The amount of water used in mixing, and ages of the above material when heated, were as follows:

| Brand. | Class. | Description. | Water. | Age. |
|---------------------|----------|----------------------|--------|-------|
| | | | % | Days. |
| Star | Portland | Set in air at 70° F. | 23.4 | 60 |
| | | " " 36° F. | 25.7 | 78 |
| | | " " Zero F. | 23.4 | 60 |
| Alsen | Portland | Set in air at 70° F. | 28.2 | 43 |
| | | " " 36° F. | 28.2 | 43 |
| | | " " Zero F. | 28.2 | 63 |
| Austin | Natural | Set in air at 70° F. | 37.1 | 57 |
| | | " " 36° F. | 37.1 | 57 |
| | | " " Zero F. | 36.7 | 63 |
| Bonneville improved | Natural | Set in air at 70° F. | 35.9 | 44 |
| | | " " 36° F. | 35.9 | 44 |
| | | " " Zero F. | 38.6 | 62 |
| Hoffman | Natural | Set in air at 70° F. | 35.5 | 58 |
| | | " " 36° F. | 35.5 | 58 |
| | | " " Zero F. | 35.7 | 55 |

From the above it appears that the water retained after drying at 110° C. is not a very considerable part of that used in gauging in neither the Portlands nor the Natural cements. These are general results.

The relation between the water and carbon dioxide with reference to the parts of the cake are shown in the two determinations which follow, taken from the material of a briquette which had set 9 months in air:

| Description. | H ₂ O | CO ₂ |
|---|------------------|-----------------|
| | % | % |
| Material from the outside parts of the briquette..... | 5.88 | 8.69 |
| Material from the inside parts of the briquette..... | 5.62 | 2.60 |

In the earlier table the less CO₂ will be noticed in those samples which aged in an atmosphere at Zero F. The difference is so pronounced that we may be justified in entertaining the belief that the low temperatures arrested or retarded some of the reactions which more promptly take place at ordinary temperatures, a conclusion fortified by the tests on the compression and tensile strength of the material.

THE TIME OF SETTING.

The interval of time during which a cement is said to set is commonly judged of by some arbitrary method, such as the indentation or the penetration of a weighted needle, and as the test is commonly made the time is divided into two periods, initial set and final set, so-called, or by the penetration method the interval of setting is taken as the time intervening, beginning when the weighted needle is incapable of completely penetrating the cement pat and ending when it no longer leaves an impression on the upper surface.

The Arsenal tests followed lines naturally suggested by the fact that the apparent time of setting is modified by the quantity of water used in gauging, and the results were accordingly varied at will, over certain limits. The quantity of water is frequently specified for this test, but since nothing is said about the water to be used in practice the direct bearing of the ordinary test on constructive work is not clear.

Some tests were made on the compressive strength of cements which were held different intervals of time in the

mixing bed before the material was tamped into molds and allowed thereafter, to set undisturbed. A mixture of suitable consistency for use in masonry construction was employed, and water added as required to maintain this consistency. Cement treated in this manner and tested when one month old showed the primitive strength was fairly well maintained for retarded intervals after mixing of two, four and even eight hours, and after four days' time intervening between gauging and tamping into the molds the cement retained a part of its strength. Another Portland cement, allowed to set soon after gauging, was broken up six days later, reground and regauged, and when tested found to have a cementitious value; over 10 per cent. of the primitive strength still remained.

TEMPERATURE ACQUIRED DURING SETTING.

If a small quantity of cement is mixed with water, making a lump containing 8 to 16 cubic inches of material, this mass will not show while setting a marked rise in temperature. Increase the quantity of material, and with Portlands it is found that 6, 8, 10 and 12-inch cubes successively acquire higher temperatures, attaining a maximum above the boiling point of water. The stronger cements as a class acquire the higher temperatures during setting, also a cement fresh from the mill appears to acquire the highest temperature, and during a part of the time of setting shows the most rapid rate of increase.

The Portlands in general, after mixing with water, slowly increase in temperature for a few hours, after which the rise becomes more rapid, reaching a maximum 8 to 12 hours after gauging. The highest temperature is sustained only for a short time, followed by a slow decline, requiring upward of a day and a half to return to the temperature of the room. The quantity of water used modifies the temperature acquired. Increasing the quantity lowers the temperature curve. Mortars show less rise in temperature than neat cement, diminishing as the leaner mixtures are used. The Natural cements, although not attaining so high temperatures as the Portlands, reached their maximum at an earlier period.

At the Watertown Arsenal compression tests have been chiefly made on the strength of cements, conforming in this respect to the manner in which other materials for masonry construction are tested, and to the manner in which the mate-

rial itself is generally loaded. The compressive test is also one easily made, if that feature is permitted to influence the choice of specimen. Cubes ranging in size from 2" to 12" have been employed in the direct examination of the material.

For the determination of the elastic properties of cements, prisms 4"x6"x24" have been adopted as convenient for the purpose. Common values for the Modulus of Elasticity of Portland cement range from 2½ millions to 3 M. pounds per square inch, while for Natural cements values below one million pounds per square inch are found. Constructive materials, as a rule, follow the law, the stronger the material the higher the Modulus of Elasticity. The values found in materials which are used in construction with cement are 2½ millions for ordinary hard burnt brick, a range from 2 millions to 12 millions for natural stones, with occasional values outside these limits.

Whether cement is used in the joints of brickwork, stone masonry or concrete, there seems no room for doubt that the best results would be attained when the component parts of a structure of uniform sectional area, working under direct stresses, have the same Modulus of Elasticity. The greatest strength displayed by a brick pier, among the Arsenal tests, was one in which the bricks were laid in joints of neat Portland cement. Some control in one direction in the value of the Modulus of Elasticity of a mortar can be exercised by using lean mixtures, which has the effect of giving lower values.

STRENGTH AFTER EXPOSURE TO LOW TEMPERATURES.

An extended series of specimens, small cubes for compressive tests, were prepared and exposed to different temperatures while setting, in three zones, in the vicinity of 70°, 36° and Zero F., respectively. After different ages the strength of the several groups have been ascertained. Those specimens which aged at the two lower temperatures were placed in a cold storage warehouse.

In order to subject the material to conditions of great severity, surpassing that which would ordinarily be reached in use, but having in view subsequent tests in which the conditions would be somewhat ameliorated, those cubes which were intended for exposure to Zero temperature were made during cold weather and immediately exposed to a temperature considerably below freezing. A few hours later the cubes were placed in cold storage. The tests were varied so as to show the

effects of seasoning for different periods while remaining at about Zero temperature, and after their subsequent removal from cold storage and setting different additional periods of time in the air at atmospheric temperature. Those exposed to a temperature of about 36° F. were treated in a similar manner.

Referring to the cubes which were exposed to Zero temperature, the general results indicate that the period of such exposure was one of slight activity with respect to the acquisition of strength. The brief interval between the time of adding water to the cement and the freezing of the mixture permitted the inauguration of chemical changes, tending to give some strength to the material, and the period of thawing in part afforded normal conditions of setting. While in some cases the interval at Zero temperature seemed one of nearly complete suspension of chemical action, the results lead to the conclusion that feeble activity continues, as shown by the slight gain in strength of those kept for a long time in the freezing temperature.

Upon exposure to a temperature in the vicinity of 70° F., after removal from the cold storage warehouse, there was a rapid gain in strength, corresponding in kind to the early stages of induration which follow gauged cements set in air at ordinary atmospheric temperatures.

Comparing the strength of specimens which set in air at 70° F. only, with those which set an equal time in air, but succeeding an interval in the freezer, it appears that the period at Zero temperature has been somewhat detrimental as well as retarding the acquisition of strength for the time being. The conditions attending those specimens which set in air at about 36° F. were generally more favorable to the ultimate attainment of high strength than setting at 70° F. only.

Tests are being made upon cements after exposure to higher temperatures covering, in the present series, a range up to 1,000° F.

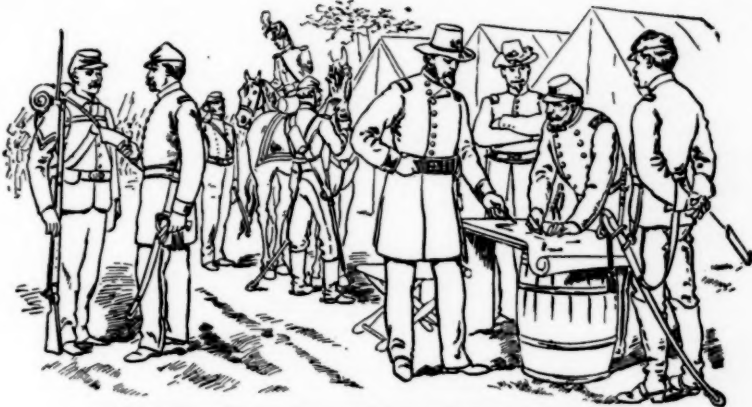
The influence of a "restrainer," *i.e.*, plaster of Paris, on the behavior during mixing, and the strength of cement fresh from the mill, has been the subject of inquiry. Besides modifying the rate of setting, the results of compression tests show the cement with the plaster present possesses a little higher strength than the same brand without the plaster.

Concerning the integrity of cements after the lapse of an interval of time, an interesting case has presented itself. About

two years ago some briquettes were made of a well-known Portland, and among the number were those made in equal parts of the finer and coarser grains, obtained by sifting. The finer grains were $\frac{1}{1000}$ diameter and less, whilst the coarser grains measured about $\frac{1}{200}$ diameter each. The briquettes were found low in strength when tested one week old. Corresponding briquettes were made substituting granite dust of the same size of grains for the coarser cement. These briquettes showed a much higher strength than the former. The broken ends have been kept in a drawer where now those briquettes which had the coarser grains of cement in their composition are in a state of complete disintegration, while those containing granite dust are intact and hard. Other briquettes made of coarse cement alone, or mixed with granite dust, are also disintegrated, but those made of the finer grains of cement retain their integrity, and with their hardness apparently unimpaired. The disintegrated fragments swelled.

Tests embodied in the forthcoming Report of Tests of Metals made at the Watertown Arsenal for the year 1901 furnish the material on which the above data and remarks chiefly rest.





Comment and Criticism.

"Military Engineering in the National Guard."*

Captain George D. Snyder, M. Am. Soc. C. E. (Late 12th Inf., N. G. P.).

It is most gratifying to the friends of the National Guard to notice the increased interest and encouragement it is receiving from the officers of the Regular Army. In the past, many of the officers of the Regular Army have not encouraged the development of the National Guard to the maximum of possible efficiency, for the reason that they have feared that the nation, reposing in a false sense of security in the efficiency of the National Guard, would fail to give the Regular Army the legislation and support so necessary to its keeping pace with the developments of modern times.

On the other hand, the ease with which high rank has been obtained in the National Guard of some States by men without commensurate experience or training, the numerous and gorgeous staff officers, and the claims of such to equal consideration with those of the same rank in the regular establishment, have prevented the National Guard from being taken seriously, and have often obscured the patient effort and hard work of the regimental and company officers in trying to bring their organizations to a respectable state of efficiency in spite of a lack of proper legislation and support.

As a matter of fact, the National Guard has suffered even more than the Regular Army from a lack of attention to its needs by our national legislators. Recent tendencies seem to indicate a better understand-

*See *Military Engineering in the National Guard*.—By Capt. E. Jadwin, JOURNAL, for Sept., 1902.

ing of the relative functions of these two elements of our national defense, and the prospect is that they will receive better support and encouragement than ever before, and be developed together instead of on antagonistic lines.

Captain Jadwin has called attention to a latent force susceptible of great development. Our English cousins are in advance of us in this respect, at least, for, out of an aggregate of 408,000 in their militia, yeomanry and volunteers, as they stood in normal peace conditions prior to the South African War, 16,900, or slightly over four per cent., were engineers.

It is believed that with the excellent personnel available, this country could, by proper training in time of peace, put a corps of officers and men of this kind in the field superior to anything in the world. It is a mistake to wait until hostilities have commenced before undertaking to train and organize such an auxiliary force of engineers, for its greatest field of usefulness will be in the early days of a campaign; for, should a war be short, the opportunities will be past before it is ready to act, and should the war be long, the other troops will learn to do for themselves much of the rough-and-ready field engineering required.

In the Spanish-American War the three regiments of volunteer engineers were, only with the greatest exertions, made ready to take the field shortly before the signing of the peace protocol, while, if an equivalent number of organizations had been in existence as companies of the National Guard, with some military training and engineering equipment, they could either have been merged into the volunteer regiments, or have taken the field at once as militia, and performed engineering duty until the volunteer regiments were organized and equipped.

The writer is of the opinion that if a competent body of engineer troops had been the first organization on the ground, at each of our great volunteer camps, in 1898, that bad sanitary conditions and the consequent sickness would not have been so prevalent. As it was, if engineer troops were assigned to a corps, they were practically the last to report.

The first duties of the Corps of Engineers prescribed by the Army Regulations, Par. 1677, are as follows: "The duties of the Corps of Engineers comprise reconnoitering and surveying for military purposes, including the laying out of camps," etc. As there were no engineer troops, and few, if any, engineer officers, at these camps, in their early days, this duty was left unperformed.

To illustrate the use of such troops on this duty, the writer will relate his experience with the Second Army Corps and contrast the conditions in the early days of the war with those as they existed after a proper engineering staff was organized and engineering troops were on duty with the corps.

The writer was attached to one of the first regiments to arrive at Camp Alger, and it arrived before a corps commander had assumed command or a corps staff had reported for duty. There was naturally much confusion. Each regiment, as it arrived, was either assigned to a camp ground of more or less limited area, or else it wandered over the country in search of some one in authority, and would finally, in desperation, pitch camp on the nearest unoccupied space.

As there were no orders on the subject, each regiment was a law unto itself, and the camps were crowded and unsanitary, and lacked uniformity.

The chief engineer of the corps was the only officer with rank in the Corps of Engineers assigned to it. There was one division engineer officer of volunteers, and these two were the only legally constituted engineer officers with the corps. Naturally two officers without engineer troops could not perform all the engineer duty required in a camp of this size, and the work was done by detailing officers and men with similar civilian experience, from the various regiments. By the time the corps moved to Camp Meade, these details became familiar with their duties, and two companies of the 2d Regiment Volunteer Engineers were assigned to it, and much improved conditions existed.

Here a careful examination of every camp site was made before it was selected. The character of the soil, natural drainage, nearest available water supply, size and general healthfulness were all considered. The general lines of the camp were staked out, and when a regiment arrived it was met at the station by two guides detailed from the engineer troops, one to conduct the troops and the other the baggage to the ground assigned, and the commander was given a copy of the corps commander's general order regulating the pitching of camps, and a blue-print plan, showing in detail how the camp was to be laid out.

These arrangements, together with the attention given to the water supply, made the camp a much more systematic and healthful one.

The duties of the Corps of Engineers may be divided into two classes: those that relate to the river and harbor improvements and permanent fortifications of the country, and those that relate to the operations of an army in the field. It is with the latter class of duties that the National Guard will most likely be called on to assist.

In training National Guard troops in such duties, the work would naturally be divided into those duties that could be taught in the armory, or in spare hours in the field, in the vicinity of the men's homes, and those duties that could best be taught in camp or at an army post with the aid of more or less engineering equipment.

It is doubtful if any high state of efficiency can be reached in such an organization without a much closer connection between the Regular Army and National Guard than has existed in the past. During a

recent business trip through England and some of her colonies in the Far East, the writer had an opportunity of learning something of England's methods of instructing her auxiliary forces, and what impressed him the most was the large number of officers and men of the Regular Army detailed as instructors and drill masters to such forces. About 600 officers and 6,000 men are detailed on this duty. Some such system would be admirably adapted to giving the armory instruction to a National Guard company of engineers.

The best way to give the field instruction would be to go into camp alongside a company of engineer troops of the Regular Army, or else to embody the National Guard company with the Regular company, thus making one company at war strength with a full complement of officers. The National Guardsman would not only learn much from his Regular comrade, but the combined company could undertake work and drills that could not be properly executed by the separate companies alone.

Courses of study should be thrown open to officers at the Engineering School of Application, and means should be devised for the education and training of a reserve of engineer officers not attached to any organization of engineer troops, for use on staff duty.

In view of the fact that most of the enlisted strength of engineer companies of the National Guard should be composed of men with a mechanical trade, and as most men of such trades are members of trade unions, many of which have recently seen fit to forbid their members from joining the National Guard, there may be difficulty in obtaining a suitable enlisted force.

It is not probable that such unions will long persist in an attitude which prevents their members from participating in the benefits to be derived from one of the rights and duties of citizenship, as prescribed by the Constitution, and leads to the inference that they contemplate gaining their ends by lawless acts of violence. The result of such an attitude, carried to its ultimate result, would either be a larger Regular Army or force every able-bodied man not in a trade union into the National Guard, just as in India, since the days of the mutiny, practically every able-bodied man not a native is either a regular or volunteer soldier.

War is becoming more technical, and greater use is being made of mechanical and electrical appliances, and men with technical education and experience will be more necessary than ever before. This country is invading the territory of the older nations, not with armies, but with the products of the brains and energies of its engineers, and it can always rely on its engineers to devote their best talents and energies to the furthering of her interests in war as they have in peace.

Captain Jadwin's paper is valuable and timely, and it is to be hoped that this matter will be taken up by the National Government and some of the States, and some of his suggestions adopted in the near future.

"A Moral Preparation of the Soldier."*

Lieut.-Colonel James Regan, 9th Infantry.

The paper of Colonel Bullard has no doubt been prepared in the interest of discipline and with the welfare of the soldier at heart. But while he points out the obligations and duties of officers, he seriously arraigns the character of the American soldier, who has certainly shown himself as moral and intelligent as the people from whom he sprang. All classes of men enter the service. Nobody, not even his officer, has claimed perfection for the soldier. He is human and, under a wise discipline, has proven himself a good man and a manly man, and brave to a fault.

In all fairness, we cannot expect the soldier to be better than the ordinary run of humanity. While the causes of desertion have been variously stated, as this paper indicates, and I do not think for a minute always accurately, the main cause, in my opinion, is the lack of correct management of the men upon wise and broad rules of discipline, based upon common sense. The "Golden Rule" is as applicable to the officer as it is to the enlisted man, but is it evenly applied? This I shall leave to the service to answer. The essential and cardinal principles of discipline are contained in the first four rules in the Army Regulations, and ought to be to the Army what the Ten Commandments are to the Christian. They are:

"1.—All persons in the military service are required to obey strictly and to execute promptly the lawful orders of their superiors.

2.—Military authority will be exercised with firmness, kindness and justice. Punishments must conform to law and follow offenses as promptly as circumstances will permit.

3.—Superiors are forbidden to injure those under their authority by tyrannical or capricious conduct or by abusive language.

4.—Courtesy among military men is indispensable to discipline; respect to superiors will not be confined to obedience on duty, but will be extended on all occasions."

These are plain, but how variously are they interpreted and carried out. Almost as variously as the classes from which the officers have entered the Army. The young officer from West Point takes the standard under which he was brought up as a boy, a very serious, uncompromising one, but that standard, while in principle correct, must be materially modified and broadened by a careful and painstaking study of the character of the men he commands after he graduates, and so to a certain extent is this so with the other classes of officers, those from the ranks, volunteers, and civil life. The regular has always been looked upon as the exemplar and standard for all other military organizations of the country, and if he has failed, as

*See "A Moral Preparation of the Soldier for Service and Battle," by Major R. L. Bullard, U.S.A., JOURNAL M. S. I., Nov., 1902

this paper would indicate, it must have been to a very limited extent, and mostly in minor details. What a fine record he has made in every war, without one stain on his shield; we are all proud of it. Approbations of his conduct and splendid valor in all our wars, and the most recent ones, would fill a good-sized book.

These few remarks are made on the paper of Colonel Bullard because I do not consider for a moment that the purpose of Colonel Bullard is seriously to asperse the character of the American soldier, because his own too happy experiences with the white and colored soldiers, refute this idea. Certainly what he has accomplished other officers have done likewise. I have been of the men and over the men for over forty years, and have always found if they are treated as men and not as things, are properly instructed and led, they will do the right thing and will follow their officers, no matter what the ordeal of shot or shell.

Major James Chester, U. S. Artillery (Retired).

Major Bullard's article on "A Moral Preparation of the Soldier for Service and Battle" is an arraignment of the methods which have produced the best soldiers the world has ever seen; and that remark includes other armies as well as our own. Not that one would deny the teaching of his experience, or that portion of it to which he appeals in his article. His experience was peculiar. He had to deal with special types of men, and his efforts were assisted by a powerful stimulant which he entirely overlooks. Men who feel that they are going to do battle for their country, in the near future, have a higher opinion of themselves than the average civilian can understand, although he looks with admiration on the uniform, and sometimes the man within it. This enhances the opinion which the soldier already entertains of himself, and makes him susceptible to oral stimulation.

No doubt the men of a negro regiment are excellent material to operate upon in this way. They have rarely, or never, been spoken to in kindly persuasive tones by a white man before, and they have always had grave doubts about their personal importance or social standing. To be told by a white gentleman, therefore, that they occupy a position of which any man might be proud is no doubt stimulating, not only to their pride but also to their obedience. The gentleman who has cleared away that cloud which has hitherto enveloped their personality is a man to be obeyed—and respected, nay, almost worshipped.

With the white volunteer regiment the case is somewhat different. The white volunteer soldier feels that he is the equal of any man in civil life, but he is not so sure about officers in uniform. He feels a little nervous in their presence. He recognizes that patriotism, or

ambition, or whatever the cause of his enlistment may have been, has placed him in the power of that man in uniform. That his very life is in his hands to dispose of as he sees fit in his country's cause. When, therefore, that officer talks to him in a kind-hearted, fatherly way, he is much amazed and highly delighted. The good qualities within him are stimulated and the evil ones are restrained. He feels that his commander is his friend, and resolves, no doubt, to do everything to please him. When the day of battle comes he will try to be a hero for his kind commander's sake.

All that is very beautiful, but it is doubtful if the feeling and resolutions extend to the everyday drudgery of camp life. There is nothing heroic in police work. Country boys never can appreciate the strictness and necessity of sanitary rules; therefore their observance is not a pleasure. They shirk them if they can and do them when they must. That lecturing can ever make them pleasant is doubtful. That discipline makes them a duty is the experience of centuries.

But the day of battle is the goal of the volunteer soldier's ambition. To reach it he is willing to do many foolish things as he believes them to be. What he imagines about battle he keeps to himself. But he believes in his kind commander and determines to distinguish himself for his sake. But there he thinks his duty ends. He thinks that non-commissioned officers are a nuisance and are all down on him because he is a favorite at headquarters. And this is one of the effects of kindly lectures by the commander. The soldier who has been most affected by them has learned to despise, even while he is compelled to obey, his non-commissioned officers. They are the men who order him to do disagreeable things; and he thinks they do it for spite. The kind-hearted commander never orders them to do such things.

Some captains spend too much of their time with their companies. They are everything and the non-commissioned officers are nothing. I knew a captain of this kind once. He conscientiously played the rôle of everyone in authority in that company. As it happened, he was stationed at a post with another captain who helped nobody. The fatherly captain on being asked how the company was getting along, answered with an adjective, "Bad, there is not a non-commissioned officer in it that I can trust out of my sight, and the men have been running down hill in consequence; and yet I spend the entire day among them."

On being asked how the other company was, he replied, "Very good, which is hard to understand, for the captain is never with it, except at drills, parades and inspections." Comment is unnecessary.

But the regular soldier, who spends the weary years of his enlistment in camp or garrison, without the stimulus of impending battle, presents a peculiar problem. He feels that he is the equal, nay, the

superior, of every man of his grade in civil life, and yet he is an outcast in their estimation. He has no society outside the gate. Every decent door is closed against him. The only places which accord him welcome are the rum-shop and the brothel. And yet a warm and generous heart beats in his bosom. Before he enlisted he had many friends and was respected by all who knew him. Now he is a social outcast. To lecture such a man about the proud position which he occupies would be more trying to his temper than stimulating to his pride. He is a social pariah because he cannot help it; but he is not a fool. He will stand for his rights under the law. He recognizes that "Thou shalt not" is his only guide. He must restrain himself or suffer pains and penalties. Pride and ambition of the kind that leads one in the paths of virtue cannot thrive in such an atmosphere, and morality enjoys but a short and sickly existence in the barrack-room. The regular soldier in time of peace suffers from social starvation, and the better man he is the less able he is to sustain it.

This condition leads to many breaches of discipline and frequently to desertion. The soldier's only houses of call being barrooms or worse, he incurs debts in them, and when pay day comes he realizes the impossibility of paying them, and he deserts. The immediate cause of his desertion is debt, and the cause of debt is social ostracism.

The canteen was in a fair way to cure these evils. Soldiers' athletic clubs, fostered and fitted out by the profits of the canteen, were being recognized by similar clubs in civil life. To beat the soldiers' athletic club was something to boast about, and contests were frequent. These soldiers were able to give balls and entertainments, invitations to which were highly prized by civilians of the class to which most of the soldiers had once belonged. All this was expanding the soldier's social horizon and giving him that content and enjoyment without which life is hardly worth living.

As to behavior in battle, has anybody ever found fault with the regular soldier in that regard? He needs no stimulation. He is the embodiment of the spirit of his race. Glory is not in harmony with that spirit. Duty is its watchword and discipline is the father of its fortitude and courage. Let it alone.

That timidity has been created or developed by the improvement in arms was not apparent in South Africa or on San Juan Hill. Indeed, the mortality in modern battles is much less than when hostile armies fought within less than two hundred yards of each other with muzzle-loading guns. Then the dying and the dead lay under the feet of the fighting men until the action was over, and more men would fall in five minutes than in a whole day's work under modern conditions. One cannot help thinking that nerves were subjected to trials in those days which "sniping" battles cannot equal.

Of course the instinct of self-preservation is as strong to-day as it ever has been, but no stronger. Although Major Bullard thinks that "The straining life of highly organized society has made men more nervous, more hysterical and less able to face danger, suffering and death," the war in South Africa and our own war with Spain do not show it. Captain Slocum says the British troops were brave to a fault, and we know how our men behaved at San Juan Hill. If such courage and fortitude are the legitimate fruits of discipline, is it necessary, and would it be wise, to supplant or supplement it? Let us be brave, not in word, but in deed and truth. Let us teach courage and fortitude by example rather than by precept, and the results will be as they have been. Look at General Thomas at Stone River and at Chickamauga! He had made no speeches to his men, but they stood by him. They could not help it. General Thomas had a commission from the Ruler of the Universe, and all within his sphere of influence felt its binding effect.

The opinions expressed by Major Bullard are largely entertained, no doubt, but an old soldier cannot accept them. Human nature has not changed. The art of war has not changed, although the method of its application changes with the nature of the theater of operations, and the character and armament of the enemy. And last, but not least, discipline has not lost its value nor ceased to yield desirable fruit.

Major Leven C. Allen, 16th Infantry.

"A Moral Preparation of the Soldier for Service and Battle" has a very lively and interesting spirit. It is doubtful, however, if the views expressed will be accepted in their entirety. We may ask whether or not the experience of others proves what the experience of the author makes so plain to him. I, for one, am not prepared to take them without a grimace. Three years' successful service with volunteers, black and white, in the excitement and hurrah of organizing and hurrying to the front against very poor enemies, and returning home covered with glory, is not conclusive proof that lectures on morals is the one thing needed to make the soldier exactly what he ought to be. To put men on their mettle works well sometimes, but except on certain occasions a moral lecture is apt to fall very flat and far away from the mark, especially if it become frequent and assumes the flavor of routine. Besides, I think that few captains and colonels have the gift of speech and earnestness in this particular line, as is possessed by the author. Most of them would be dead failures. I don't think that the methods would succeed with regulars. Major Bullard did not command regulars in Cuba or in the Philippines, and he is not therefore able to say how well they or other volunteers behaved. I saw a regular regiment go from Northern Idaho to

Tampa behaving, every hour, as well as the regiments did, which he thinks were under the spell by his "straight talks," while crossing half a continent. The fighting qualities of the regulars, without lectures, may have been as good as those of the volunteers commanded by Major Bullard.

Certainly our rough and tough regulars fought as well in Cuba and in the Philippines as did the volunteers who were burdened with the picnic *morale* that some of us saw.

What little I have seen of that kind of courage leads me to believe that a few bursting shells will reduce it materially with a "chug" below normal.

The officer who put his men through the manual of arms just before going into a charge—to steady them—possibly got as good results as if he had made a speech. A captain in Cuba who had worked his way through the underbrush under an unseen fire July 1, 1898, and seeing the enemy on the ridge in front, did not say "Fifty centuries are looking at you," but shouted "There they are, damn 'em, let's go for 'em." A plain business proposition that fitted the circumstance.

With his system of moral lectures, the author says that the troops showed steadfast courage, and faced hardship without a "squirm or squeal." Others may have seen something of that sort without squirm or squeal, and failed to attribute it to any special effort at moral training.

Good, healthy public opinion in a company—which any careful captain may create—is the very best *morale*, and will not easily be dampened by hardship and danger.

Major Bullard's experience proves that he was skillful enough to do the very best thing possible under the conditions, but his brilliant success does not prove that such methods would succeed as a routine work among regular troops.

The article deserves the prominence given it in the JOURNAL, and should receive careful study and thought by those who expect to command volunteers in the next war.

Lieutenant-Colonel John Joseph O'Connell, 3d U. S. Infantry.

I feel that Major Bullard's remarks presuppose a certain amount of sensitiveness to moral suasion in even such recruits as those that he states were the chief components of the two regiments he commanded as colonel—the 3d Alabama Volunteer Infantry (colored) and the 39th U. S. Volunteers (white).

Major Bullard states that the result of moral suasion exerted over these men was successful. Coming, as they did, from "the vicinity of great convict camps, straight from jails, or from wharves and mines" (in the case of the negro regiment), and though one-third of

the white regiment was made up of men who were the "leavings" from the organization of another regiment, and had been "tried over and over again for worthlessness, misconduct, drunkenness, etc." (and therefore could not have been raw recruits), in spite of this unpromising material, the moral appeals made by Major Bullard to their "manhood, honor, self-respect, love of country, and love of the flag" were so successful that the "untaught, lawless black men" were turned into "zealous, obedient soldiers, who, when subjected to various severe tests—such as "the shooting up of their camp at night, taunts, insults and personal abuse from their white comrades—maintained order, and even boasted of the moral discipline that produced their self-control."

These men, Major Bullard relates, were "untaught in books, manners or morals," yet, after the brief moral discipline of a few months' enlistment, "when they were mustered out, and up to their arrival at their furthest homes, not one case of even the slightest misconduct could be charged against them."

In the case of the 39th Volunteer Infantry (white), Major Bullard tells us that moral influence applied by "talk" was the "only means of control possible to use under the conditions of the regiment's hurried organization, its rush on board transports and pressure into direct contact with the enemy."

The results of this moral suasion—not training, for which there was "no time"—were:

1st—When the regiment was barely collected, a journey half across the continent was accomplished in perfect order, without one case of misconduct.

2d—There was little difficulty in management, because the men quite generally showed that they considered themselves bound to good conduct by promises made in the beginning to the regimental commander.

3d—The men's whole service was characterized by steadfast courage; no desertions to the enemy; loyalty to their officers, intense regimental pride, and, on and after muster out, by excellent, self-respecting conduct."

This was the result of less than one year's application of moral suasion to the worst classes of men who can be supposed to enlist; and, consequently, Major Bullard considers his thesis proven as clearly as though he had demonstrated that things that are equal to the same thing are equal to one another.

To me it does not seem proven.

Referring for a moment to some of the specific results mentioned above, it is difficult to grasp the idea that moral talk can at once appeal to young men who have from infancy been subject to a low environment, who probably inherited a blunted moral sense; whose childhood has been clouded by brutalizing influences and

parental neglect; who have grown up on the streets, hounded by the police, who, to them, represent the law and order of a community in which they, themselves, are outlaws. These, it must be remembered, are the antecedents of most men whom we find "in jails and convict camps," or "on wharves and in mines."

Is it reasonable to suppose that such men have, "in nine cases out of ten been moved to enlistment largely by sentiment, ambition for military honor or the hope of doing heroic things, whereby to win the applause of their fellows"?

Even in the average case, the recruit, as I have seen him, is moved to enlistment either by failure to make a livelihood in other avocations; by quarrel with his relatives, or because his young companions have been seized with the war "fever." But chiefly, the recruit regards the Regular Army as a means of livelihood; an occupation that is permanent, not "by the job," but which means steady food, lodging, clothing and medical attendance, with an added cash salary from one year's end to another.

On page 784 of his article, Major Bullard refers to "promises made by the men to the regimental or battalion commander."

Under what circumstances can such promises be given and received? If a newly enlisted man does not consider the oath that he has just taken to the United States Government as binding him to "decency and good conduct," of what avail will be an added promise to his regimental superiors?

The man who is indifferent to the restraint of an oath taken to his nation is not likely to feel bound by promises made to his officers, unless the breaking of his promise to the latter represents to him some penalty. I do not, for one moment, dispute the fact that, in individual cases, moral training is a very potent force; but, realizing the perplexities and problems that arise for the young captains in our army of to-day, in the discipline of men near their own age, who may have brought with them into the regular service peculiar ideas acquired in the National Guard, and almost inseparable from such service, I must assert that—

1st—Moral appeal falls dead, in most cases, to men of poor antecedents.

2d—Too much personal talk with or to men is not advisable for battalion or company commanders (always with the reservation that such talk is an admirable measure in certain individual cases). And I must ask what kind of an army would result from general discipline based solely upon promises made by enlisted men to their officers? The probability must be taken into account that, from time to time, these promises would be broken; in such case, what is the position of the officer?

He must either inflict suitable punishment upon the culprit, or condone the breach of discipline. Unless soldiers are to be regarded

as free from ordinary human frailty promises would frequently be broken; penalties would as frequently be inflicted; in the end promises would become more or less perfunctory, and thus the experiment of discipline by promises, which appears to many experienced officers an idea as unsoldierly as it is impracticable, would result in dismal failure, and the theory and practice of military discipline would revert to the old status.

To the average young American, the daily discipline of soldiering, the inevitable acknowledgment that, irrespective of his inherent merit, he must maintain an attitude of subordination towards his officers; the hard necessity of "keeping silence, even from good words"; the forced abstention from self-justification against unjust reproof—all these, and many other details of his daily experience—are to the newly enlisted man causes for acute discontent, for the reason that they hold sternly in abeyance the spirit of independent equality that, to an abnormal extent, pervades the education and habit of thought of every native-born (and of most "imported") American.

"I'm as good as you are, you understand," is the premise to all American business and social relations, from Maine to California, without thought of the logical converse of the proposition: "Granted; but don't forget that I also am as good as you are."

Acceptance of the fact of superior and inferior rank is a sharp, new lesson of life to the American youth who, from infancy, has had it urged upon his attention (especially if he has been a pupil in the Public Schools) that he is, in virtue of his nativity, the possible ruler over many millions of people—a possible President of the United States of America. Too often his teachers have directed his attention to this somewhat remote career rather than to the importance of faithful perseverance in the duties of a more modest walk in life.

To this type of recruit "moral talk" would be a pure aggravation. Don't talk to him further than to let him know that his officers are eager to acknowledge his value if he proves himself valuable, and that he has his individual place in his captain's observation of general company discipline.

After the first friction wears off, this bright young American is apt to adjust himself to his new conditions, and, nine times out of ten, he makes a fine soldier. By training, his independence develops into self-reliance, and he worthily carries on the splendid record of our army of 1898-1901—that extorted from foreign nations enthusiastic tribute to the intelligence, the initiative and the effectiveness of the American enlisted man as exceeding that of any soldier known to the civilized world.

When, after reasonable trial, the soldier fails to respond to ordinary military discipline; when he is a shirk, or insubordinate, or is in any other way a demoralizing influence in his company because of repeated

misdemeanors, observation of human nature in general suggests that a regime of *fortiter in re* is more likely to be effective than the *suaviter in modo* of a moral lecture. My own experience with all classes of men, when they prove unamenable to usual methods, has been that it is best to make the culprit feel that, for every sin of omission and commission, a penalty will promptly and certainly be inflicted upon him.

Whether he sins or not is his own affair; infliction of the penalty is the duty of his superior officer, not alone in order to correct the individual, but also for the maintenance of proper company discipline. Steady persistence in this system—a given penalty promptly and inevitably following upon a given fault—has been known to transform many “hard cases” into admirable and reliable soldiers. Constant and close attention of captains to the administration and discipline of their companies; impartiality in infliction of punishment; quickness to recognize and reward merit, will promote discipline more than frequent paternal platitudes on morality or sentiment. In many instances, I fear, the latter might excite laughter, if not contempt. The captain who is forever “nagging” cannot have the respect of his men; they will consider him weak, unmanly, and therefore unsoldierly. Example in action is more powerful than thousands of words in maintenance of company *morale*.

Major Bullard cites two illustrations of the success of his method; doubtless many officers could mention success obtained by opposite means. For my own part, I can mention Company E, First U. S. Infantry, a company that was under my command during the Railroad Strike of '94 at Sacramento, Cal., and of which I was captain during the Cuban campaign.

I believe General Graham and General S. M. B. Young will both bear me out in the assertion that no captain could desire to command a more efficient and better disciplined body of soldiers.

But I never lectured Company E, nor appealed to their moral sentiment. When I wanted a thing done, I had it done, and I did not always make known my wishes in dulcet tones; no, nor did I appeal to my men as “gentlemen.” Nevertheless, they understood that if my manner was imperative, and sometimes apparently harsh, it was due to desire for their welfare, and that I would permit no other officer to speak to them in that manner. They realized that their captain had their interests at heart, therefore they gave me their respect and confidence, and under all circumstances their unfaltering obedience, which is, after all, the very soul of company discipline. Yet I never preached, and seldom talked to them.

When the First U. S. Infantry (General Shafter's old regiment) marched out of San Francisco on April 22, 1898, en route for Cuba, it was, perhaps, as fine a body of men as ever took the field. But they were not saints, and it must be admitted they were not so

entirely well behaved as the black and white regiments instanced by Major Bullard in support of his method of discipline. Some men may have taken a few drinks too many on the way to Tampa; possibly this might have been prevented if the men had been spoken to kindly as to the dangers of intemperance before they started for "the front"; but their captains, Barry, Carrington, Edmunds, Pettit, Phister, Starr, and others (than whom there were no better disciplinarians in the army) did not indulge much in talk.

Colonel Shafter had not habituated the First Infantry to moral and sentimental appeals. He was essentially a man of action, who took the greatest care of his regiment; never spared officers or men when they deserved punishment, and generously recognized and rewarded merit on all occasions. He possessed the full confidence of his officers and men, and a better disciplined regiment never took the field.

Major Bullard, in the second section of his paper, asserts that courage in battle can be secured by appeals to sentiment.

To me, personally, after nearly forty years of active service, it comes as a new proposition that a recruit should deliberately sit and commune with himself as to his chances for life should he be called to the field of battle; that he should reflect upon the increased effectiveness of the infantry rifle, and the deadly ingenuity of the improved artillery gun, any more than that he should picture to himself his own possible sufferings "under a stream of fire that sweeps back surgeons and all relief," and work himself up to the point of imagining his emotions when he shall find his body, during a fight, "doing service as a bullet-stop." It is natural that the new-fledged soldier should shiver as he realizes, after deep meditation, that, "when zones are swept and ploughed by long-range missiles, houses, and walls, and trees, and even ranks of living comrades, cannot be relied upon to give shelter to his one precious individuality." When the modern recruit has arrived at this pitch of imaginary terror, it seems to be Major Bullard's idea that his company or battalion officers should, in heart-to-heart talks, soothe and encourage him by "thoroughly engraving on the soldier's mind all facts that show the chances of life still with victory in the fight." He is to be told that "though thousands of bullets are fired, it takes ten thousand to kill one man." N. B. Even under our improved conditions of warfare, one bullet continues to kill one man if it hits him in the right place.

Continuing the lecture of encouragement, the officer should say: "In the crisis it seems terrible to stand, and more terrible to go forward, and yet, to go back is worst of all."

Why "worst of all?"

Major Bullard does not tell his neophyte that to "go back is worst of all" because it is the betrayal of the soldier's oath of allegiance to his country as defender of the flag at all risks to himself; nor because it

is the degradation of his manhood by rank cowardice and puerile fear; nor because the man who, in battle, "goes back" lessens by just his physical strength and moral influence the chances for life of the comrades fighting at his side; no, the trembling recruit, who has as yet scarce had time to learn his drill, is to be told that "to go back is worst of all" because it is "sure destruction" to himself. Appeals to patriotism, honor, and duty, such as Major Bullard advocates elsewhere in his article, cannot go hand in hand with appeals to personal self-preservation at the sharpest crisis of the soldier's experience.

It is well known that in humanity there exists two kinds of courage. There is, first, the bravery originating in a sound, active body, animated by an intelligent mind and strong will; a combination that appreciates the full measure of threatened or actual danger, and deliberately confronts it, meantime doing the best he knows for himself and comrades.

Second, we have also in the army the man who may have enlisted as a last refuge from starvation; whose physique has been impaired by years of privation; whose nerve has been weakened, and spirit reduced by the conditions of his life previous to enlistment; whose whole former environment has been of such a nature that he has never been brought in touch with the motives of honor, patriotism, etc. This soldier may have within him the possibility of high military qualities, but months and years must be given to their slow mental and physical, and, I may add, their purely nervous evolution under military discipline.

When such a soldier is rushed into action shortly after enlistment, he goes into a fight in much the same way as does the cavalry horse, who charges the enemy because he sees the other horses charging the enemy, and is carried into the battle by the sense of comradeship and the habit of imitation. In the same way, an inexperienced recruit goes into battle because his comrades go, and, partly from inherent manliness, partly from new-fledged company *esprit de corps*, never thinks of leaving the ranks.

Moral training may be of higher value than tactical discipline as an abstract proposition; but, in controlling the mixed mass of men in our army, it can never take the place of the latter, which, combined with prompt, unquestioning and accurate obedience, must be an army's mainstay.

In case of panic, on the battlefield, for instance, when the bravest men may, for some valid reason or some senseless cause, become momentarily demoralized, moral or sentimental appeal would be utterly futile; because such a stampede presupposes an abnormal state of mind in the soldiers; a semi-hysteria that can be controlled only by the action of a strong will and personality upon the jarred nerves of the panic-stricken.

General Sheridan turned the disaster of Cedar Creek into victory by personal magnetism; he had no opportunity to use the deliberate process of moral suasion.

The personal magnetism of a great leader; confidence in the bravery and good judgment of their company officers, habits of obedience to orders, and self-reliance, inculcated by thoroughness in tactics and drill (in other words, the knowledge of what to do and when to do it), these are the qualities that stand by the soldier on the eve of battle, and stiffen his nerves during the fight, when moral appeals and sentimental encouragement are lost in the rush and roar of actual conflict.

Perhaps Major Bullard draws too heavily on his imagination when he alludes to the "shock" and "the mental strain" of modern warfare, as when he remarks that "the spaces and fatigues of the battles of to-day are almost beyond human endurance."

My own experience is, that recent battles are not, on the whole, as great a shock and strain to the individual combatant as were the conflicts of the Civil War, at comparatively close quarters, when the Springfield rifle was used, and when the combatants left dead upon the field far exceeded in proportion losses in any single conflicts during the Cuban and Philippine campaigns.

Has Major Bullard no faith in the intoxication of battle?—the half-savage impulse that carries masses of men into the face of danger without pausing to count the individual cost; the subtle magnetism that is to the human animal what the smell of blood is to the tiger. When the battle is on, this instinct for achievement, subordinated by physical and mental discipline to mechanical, implicit obedience to given orders; this is what carries the average soldier, yes, and the average officer, through deadly fire and inspires gallant conduct.

After all is said, every soldier is a man, and every true man has within himself the essential elements of the soldier.

Captain Palmer E. Pierce, 13th Infantry.

Undoubtedly, moral preparation of the soldier for service and battle is and always has been necessary. The means by which it is secured are various. For instance, the mere performance of routine garrison duty brings in its train a great deal of moral training. The various forms of respect for rank required by military regulations and customs react most favorably upon the moral nature of the raw recruit, who very likely has had, up to the time of his enlistment, very little regard for anything superior to his own will and inclinations. The discipline that comes from obeying promptly orders given at drill; the regular habits enforced on a post; the precept and worthy example set by the officers (commissioned and non-commissioned), these and many other things in military service must favorably affect the character of the new man.

Major Bullard's article deals particularly with but one of the many means for securing the moral training of our soldiers—namely, the power of the personal appeal and instruction of officers. He cites as example of the effect of such talk the success that crowned his work while commanding two volunteer-regiments, one of which was a colored organization. Truly, he accomplished marvels! But could you or I do the same? It has been my experience that soldiers, as well as other mortals, hold talk as cheap and advice as good—if it conforms to their own idea.

I recall distinctly the case of a soldier of my company which illustrates the point. One of his comrades had him dishonorably discharged for being found drunk while on guard in the trenches about Manila, June, 1899. After publishing the court-martial order I gave the company a talk upon the evils of drink, and especially upon the danger of using native liquor. I made many references to the unfortunate case of Private T—. Finally, to make my advice more striking, I took a saucerful of the native "Vino," which had caused the downfall of their fellow soldier, and burned it. As it blazed into the air, I said, "Now, men, will you put such stuff as this into your stomach to burn it out and make you crazy as well?" A few days later the paymaster visited the company, and one of the men was soon found beastly drunk on native "Vino." The doctor saved his life only by most heroic measures. When the pale and sickly looking fellow was returned to duty, I said to him: "What did you mean, sir, by drinking that vile liquor after I had told you what it would do to you!" He replied, "I just wanted to see—well, to see if what you said was true!"

This incident shows that Major Bullard's talk to soldiers must have been much more effective than mine. In fact, to have secured the striking effects mentioned in his article, he must have a greater power of persuasion than falls to the lot of most of us. I am not one of those army officers who consider themselves men of action and not of words, and who hesitate to talk to and advise their men. However, I do think that there is danger of an officer talking too much to his men—of losing his influence over them by lecturing so much that they may come to regard him as a "Granny" or a meddlesome "Nagger."

The personality of the officer must determine how much talk and advice he may give without doing positive harm.

Major Bullard's article ought to be read with care by every officer. Since reading it I place a higher value upon the power of personal appeal than I ever did before.

Colonel J. W. Powell, U. S. A.

This essay sets out with the idea of inculcating a high moral tone among grown-up men, certainly and unquestionably a very commendable project, but should rather have place with this element in

early childhood; and if it be intended, in Major Bullard's thesis, that officers of the army, "by the live word of speech addressed straight to the men" (page 781), entertain the soldiers with conversational moral appeals, with themes on "the patriotism and the high sentiments and aims of our fathers, who founded this government * * * and the blood spilled in its maintenance" (page 791), to follow such course would seem to rather merge the proper vocation of the army officer in the sphere of duties of the chaplain to the wayward offender awaiting trial in the guard-house. While patriotism and loyalty to our flag inspire all men of spirit and honor to enroll in the hour of danger or need—no words are then called for—I am not prepared to believe that all enlistments in peace times have impulse in these lofty sentiments, or, rather, that other causes are potent factors. I would not for an instant characterize the system as "Tommy Rot"; far from it, for the elevating influence would be beneficial; but the method proposed is all wrong, and this is said without suggesting a better plan.

The military profession does require officers "to be men of action and not of words," and by absolute and unselfish attention to duty on his own part, and the care, comfort and instruction of his men in their military duties, set example of high moral tone and behavior; coddling of his men will be resented, and, while the captain may be the "Company Father," he is not to treat those under his command as immature youths struggling for light. Interest in the art military can be created and fostered on the winter days when drill is impossible by illustration of campaigns, with descriptive maps, reading from the works of masters in the art and science of war, which excite interest and desire for glory. And it must not be overlooked that there is and must be maintained the social difference between officers and enlisted men, a matter materially affecting discipline. This is entirely another affair in the militia organizations, although a recent instance in one of the National Guard regiments in this city is in point, the colonel stating that, in his regiment, the line of demarcation between the officers and men was strongly accentuated, and with desirable results.

It is possible I do not know that to a newly organized regiment of volunteers of African descent in the South, the theoretical system may evolve as good results as found by Major Bullard, but I am constrained to essentially differ with him upon this subject, as I understand his proposition.

Captain John H. Parker, 28th U. S. Infantry (Late Major 39th Infantry, U. S. V.).

Colonel Bullard reaches the very heart of the subject. He is eminently qualified by experience to discuss it. It was my privilege to muster his Third Alabama out of the service, and one result of care-

ful observation of that regiment was the opinion that it was one of the best-disciplined volunteer regiments that had come under my observation.

Colonel Bullard's methods were severely tested here. The regiment had been subjected to a peculiarly trying and demoralizing experience. In a certain sense, the whole future of the colored race as material for volunteer soldiers was on trial. The successful application of his ideas to this material, some of it very unpromising, was to demonstrate whether seven million of our population are useless as volunteers for purposes of national defense, or could be used like any other part of the population. It is not too much to say that his success solved that question, and led, in all probability, to the formation of the colored regiments of volunteers subsequently used in the Philippines.

It was determined to spare no effort in the muster out of the Third Alabama that it should be marked by as little disorder as possible. To this end, pursuant to the views expressed in his article by Colonel Bullard, every company was addressed at final assembly, both by him and by me. We explained to them just why disorders would be prejudicial to them and their race; we appealed to their manliness, their regimental pride, their self-esteem and their honor, that every man should not only avoid disorder himself, but should constitute himself a committee of one to see that his comrades did the same, as far as possible. Perhaps we had some advantage in that both of us are Southern men, and, therefore, have knowledge of the negro character.

Arrangements had been made with local police officers, with railroad authorities, and with correspondents, to keep track of all the men for a limited time. This was done for three days, with the result that it was absolutely certain that not a single case of disorder—not even a case of drunkenness—could be charged against a member of the regiment in these three days. These men were the ordinary negroes of the country. They were surrounded by a population more than willing to take up every case against them, and which expected some trouble from them after muster out of U. S. service. Every man in the regiment had money—most of them more than ever in their lives before. They were just released from the restraints of military discipline, under circumstances which would have excused some demonstration; but the words of their colonel went with them to their homes with such effect that no regiment did make or could have made a more creditable record in the manner of its leaving the service. Those who are familiar with the incidents of that winter will contrast the conduct of these negroes with some incidents that occurred in the same section, in which negroes did not take part, to the advantage of the negroes. It was due to the hold Colonel Bullard had on these men—a hold gained in the manner he has described in his article.

It was subsequently my good fortune to organize and command a battalion of the 39th, to which Colonel Bullard refers in his article. The same methods were used, the same results obtained. It was not uncommon for the colonel to address a battalion, a company, or a detachment. It was often done, particularly when such organization was going on hard or dangerous duty. He did the same to the officers, both formally and in private conversation. He frequently made use of the same methods with individual men, especially those with whom he came in contact in a disciplinary way. His own example enforced the precept. That is essential.

The result was strikingly shown in the increased efficiency of the commands. It kept down the sick report. It prevented grumbling. It lessened the summary court record. It made men stand up to fatigue and escort duty to the very limit of human endurance without a murmur; made them stand guard duty for periods when it was sometimes impossible to relieve them for days at a time, yet with a vigilance which always, every time, gave the first shot to the 39th; made their advance guard duty, which is so important in that country, so vigilant that there was never a case where we failed to beat the enemy in his own tricks of surprise and ambush; filled the men up with that "go" that wins, no matter what the disparity of numbers, in battle.

These results are worth going after. They can be obtained by Colonel Bullard's method. He has done it.

The reason is that you thereby stimulate the self-respect, the *esprit de corps*, the manliness, the moral worth of your men. These are the qualities that ultimately determine how far a man is going to go in battle; how far he will resist the temptation to be worthless, rowdyish and drunken in garrison; what kind of an influence he will exert on his fellows daily and at the crisis of his service, whatever that crisis may be. It draws the soldier nearer to his commander; makes him feel that both are human, subject to the same passions; that the officer knows this and makes due allowance for it, while at the same time expecting of the man the uttermost humanity can do when called on for the last desperate strain, or for everyday duty.

But he who infers that this method is to take the place of the ordinary methods of discipline is much mistaken. It did not with Colonel Bullard. No man could be more prompt to use the penalties of broken discipline, or could use them more effectively, when necessary. When he "went after" a man, he "went after" him hard; and he always reached such offenders as were not amenable to the higher appeal by applying the penalties of their offenses in an exemplary manner. But the principal effort was that there should be as few such examples as possible. It is not a lowering of the standard represented by his methods, but rather a humanizing of the relations between officer and man, to the advantage of both. The application

of this method improves discipline, saves lives both in camp and in battle, and makes of an organization, not a machine, but a sentient, vitalized creature, jealous of its honor, tenacious of its rights, patient under hardships, and viciously effective in battle.

Colonel Bullard has done the service a benefit by this analysis of his methods. They are not new. They have been used by every great commander, in one form or another; notably by Napoleon. They depend on the study of human nature, and are within the reach of every officer. But the analysis is peculiarly timely and valuable, illustrating, as it does, to so many young officers, the method of applying these principles he has used with such success.

Major W. D. Beach, 10th U. S. Cavalry.

From the ethical as well as the practical standpoint, the essay of Major Bullard is interesting and instructive. His experience has been broad and his opportunities for observation great, but it *does* seem to the undersigned that something besides moral suasion should be given part of the credit for the phenomenal state of affairs in the two regiments he had the honor to command.

That this moral preparatory training for a negro regiment recruited "a few from the fields, more from the mines and wharves, two or three hundred from the vicinity of great convict camps (an easy guess what they had been)" * * * should raise them to a condition so nearly sanctified that "not a case of even the slightest misconduct was found to charge against them," seems to make the millions of dollars spent by the various churches for home missions "look like thirty cent"-uries (pardon the lapse!) of misdirected effort. Perhaps if Colonel Bullard's captains and lieutenants could be heard, they might recall a case or two among these 1,200 men, or the other 1,200 in the Philippines, where there was not entire absence of "dodging and shirking;" that they might have been cognizant of a few cases of moral obliquity that failed to reach the Colonel's ear. A colonel in the Philippines, by the way, usually had troubles of his own without bothering too much over the delinquency records of the enlisted men, scattered, perhaps, as was the case with the 39th Volunteers, over a hundred square miles of territory.

I am a believer to a limited extent in this very method of "moral preparation," but I have not perfect faith in its efficacy on all occasions or on all men.

I also "have tried these things upon men and they (didn't) work" in the following instances:

A member of my troop serving a long guard-house sentence appealed to me, on the troop being ordered to the Philippines, to secure his release so that he might go along. He had the appearance of a rough and ready trooper, such as we often find invaluable in the

field, but a nuisance in a post, so I asked for and secured his release, taking the occasion to appeal to his manhood and patriotism and soldierly instincts, with the result that he wept tears of penitence and gratitude, promising faithfully to mend his ways. He kept straight for a week, but during the last few days before the troop left for the Pacific coast he was absent without leave. On the morning of our departure he turned up at the train, coatless, unkempt and generally disreputable, asking to be taken along, and promising all manner of reforms. I did take him along and he served nobly as kitchen police for a week, when he again absented himself, in Seattle. This time I hoped the troop was rid of him, but later on he surrendered himself and was sent to Manila, where he again joined the troop for an interval, again proved his worthlessness, his total lack of moral sense, and again left, never to return.

The other case was that of a private who when the troop was ordered on foreign service wanted to stay at home and appealed to me to approve his transfer. I talked quietly but earnestly to him of his duty, his opportunities for honorable service and kindred topics, and thought I had made an impression, but on the departure of the troop he was missing and I judged a deserter, until when near Chicago, I received a telegram from the Adjutant-General stating that Private Blank had surrendered and desired transfer to one of the troops of the home squadron. In reply I stated that I believed the man to be a coward, giving my reasons therefor, and recommending his discharge without honor, which was at once ordered.

As an offset to these two cases I once appealed to the troop to ferret out a thief among their number, telling them that thieving, next to cowardice, was almost the one other unpardonable sin in a soldier, and that the traditions of the service required the men themselves to discover the culprit. He was discovered and a court promptly convicted him on the evidence secured by the men themselves.

Moral character and patriotism are not of mushroom growth, and while the higher nature of a man apparently devoid of honor may sometimes be successfully appealed to, I am loath to place the exalted value on the few minutes' talk to a lot of mature men which seems to have so impressed Major Bullard.

I suppose no commander ever got more out of his officers and men than the late General Lawton, and yet his staff officers never knew of any other method followed by him than uncompromising sternness, and an example in himself of duty performed for duty's sake. There are other ways of instilling honor, duty, pride, ambition, heroism and patriotism than by haranguing men after the manner in vogue in the great war; personally, I believe a breath of example is worth a typhoon of talk. I have in mind two captains, both rigid duty soldiers, both harsh in the extreme toward delinquents, the men

of both troops being ruled through fear of punishment, and yet one organization was always above the average in efficiency and the other far below. There may have been other reasons for the difference, but the one that seemed to me most prominent was the fact that one captain, while always the same uncompromising rigid disciplinarian, stood up for his men in securing for them the best of everything obtainable, defended them in their rights and made them believe that he had no earthly ambition beyond commanding the best troop in the service, while the other gave the impression of hounding his men in order to detect delinquents, of spying upon all for the purpose of detecting the occasional wrongdoer, of having a feeling of distrust toward his men, instead of, as in the other case, one of complete confidence and pride.

I believe there is great danger in overdoing the moral suasion method, in relaxing the bonds of necessary dignity in the endeavor to orally persuade men who will, behind your back, laugh at your efforts. Perhaps I am wrong, but a considerable period of service and observation has taught me that advice and example should be about in the ratio of one to one thousand.

My belief is that Major Bullard unwittingly exaggerates the importance of this so-called "moral preparation" to the prejudice of the splendid example of energy and devotion to duty (if I may say it) set the men of his regiment by himself and many of his officers.



WHAT LESSONS CAN WE DRAW FROM THE BOER WAR FOR OUR INFANTRY ATTACK?*

BY LIEUT.-COLONEL VON LINDENAU, GERMAN ARMY.

(Translated for M. S. I. by Captain Carl Reichmann, U. S. A.)

INTRODUCTION.

THE literature of the Boer War is very extensive to-day. A great number of books in different languages have been published. Appendix I. is an exhibit of those chiefly consulted. It is nevertheless difficult as yet to get reliable information of the various battles. The English reports still contain a number of contradictory statements, and do not go much into detail. Communications addressed to and kindly answered by British officers have explained some of the contradictions mentioned. The best information I have gained is from the notes of Baron von Luttwitz, Captain in the General Staff who witnessed the Boer War as military attaché to the British army, and kindly placed them at my disposal. I desire to express to him here my special thanks for his courtesy.

Information from Boer sources is rather limited; it was therefore of great advantage to me to be allowed to use the diary of a German who participated in the war on the side of the Boers, and who is now again in our ranks. The author of "Military Considerations of the War in South Africa," who fought with the Boers, was also so kind as to give me some very desirable information. To these two gentlemen I again express my best thanks.

Berlin, March 5, 1902.

VON LINDENAU.

* Lecture delivered before the Military Society at Berlin, March 5, 1902, by von Lindenau, Lieutenant-Colonel, Chief of Division in the Great General Staff, with two sketches. Berlin, 1902, Ernst Siegfried Mittler and Son.

At first sight it might appear rather strange to ask this question, What are we, who may never expect to fight except on European soil, and against modern European armies, to learn from a war that was fought under the hot South African sun and under such peculiar conditions?

* * * * *

2. TERRAIN AND CLIMATE.*

Where in Europe do we find extensive uninhabited stretches of country devoid of cover from sight of tree and of shrub? Above these immense African lands the air is of extraordinary purity and clearness, which serves to bring out sharply the monotony of the South African terrain and makes orientation most difficult for the European, habituated as he is to a variegated landscape. There is therefore much danger of losing one's way.

The eye learns but slowly to perceive promptly the changes in the formations of the African terrain. All light-colored objects are far more sharply defined than in our own terrain; the question of clothing requires, therefore, most careful consideration. However serviceable in the bright sunlight and in the high temperature of the day, the white helmets of the British did not prove suitable. The temperature in daytime sometimes reaches thirty degrees Réaumur, and is sometimes so great as to restrict marching to the night and to the early hours of morning and evening. The differences of temperature are also considerable; in the dry season from April to October hot days may not infrequently be followed by several degrees of frost during the night. The monotonous and constantly recurring hill formations are covered with masses of loose rock. Their ascent is most toilsome, and the summit is frequently rimmed with a vertical wall of rock, and no shady woods or water are to be found there. The "kopjes" which played such a great rôle in the various actions are of such singularly regular form that one might almost believe them to be fortifications erected by man's hand. As regards cover, they are said to compare favorably with the earthworks used in our field fortifications. Indeed, they are superior to them in this, that their irregular, jagged edge affords excellent head cover for the men while firing. In looking at the view of Spion Kop or the sketch of the hills around Colenso made by Captain von Luttwitz, * * * and in seeking in our own country for terrain at all resembling these South African formations, we mention in the first line the heights appearing in some places in the Province of Hanover on the banks of the Leine, for instance, near Elze, which are known under the name of "The Finie."

These heights were the scene of the imperial maneuvers of 1889. They were defended by the 16th Army Corps under command of His Majesty the Emperor, and attacked by the 7th Army Corps under command of General von Albedyll. Only in this way do we obtain a proper idea of the difficulties of the attack invariably encountered by the British when facing the Boer positions.

3. FIELD FORTIFICATIONS.

These positions were in most cases strengthened by the Boers by means of irregular trenches, deep rifle pits, or heaps of stones. Let us note here that stone splinters do not produce frequent and dan-

* From the "Boer War in South Africa" and "Military Considerations of the War in South Africa," by Major von Estorff of the Great General Staff.

gerous wounds, as is generally believed. The Boers considered stones as an excellent cover against all kinds of fire. They placed them on top of their trenches in preference to sand bags.

The fortifications of the Boers were almost invariably well adapted to the ground. They strengthened the naturally strong defensive positions and rendered the difficult task of the attacker still more difficult.

4. NUMBER OF COMBATANTS.

The number of combatants on either side bears a peculiar proportion to the immense extent of the South African theater of war. This theater is bordered on the south and east by the sea; if we circumscribe it on the north and west by a line drawn from Lorenzo Marquez or Delagoa Bay through Pretoria and Mafeking to Capetown, the inclosed area is approximately 800,000 square kilometers, almost as large as Germany and Italy combined. In this vast area the attacker as well as the defender widely dispersed their forces. The strength of the total forces raised by the Boers hardly equaled that of three German divisions on war footing, about 50,000 men. The British troops gradually reached the strength of approximately five German army corps; the protection of their long lines of communications, however, and the dispersion of their forces prevailing up to the arrival of Lord Roberts, absorbed so many men that but small fractions of the original force were present and available for the main battles. Thus for the three actions particularly well suited for our discussion there fought:

At Magersfontein, 12,000 men (a small division) against 6,000 men (a brigade).

At Colenso, 15,600 men (a division) against 3,000 men (a regiment).

At Spion Kop, 20,000 men (a strong division) against at most 4,000 men (a small brigade).

5. INFLUENCE OF TERRAIN, CLIMATE AND NUMBER OF COMBATANTS.

In view of the peculiar conditions of numbers, terrain and climate, above referred to, it is evident that the conflicts in South Africa were bound to bear a different aspect from the battles that we may expect, the mere extent of the battle-fields in itself being bound to produce conditions differing from those in the Boer War. In Europe the great armies will seek to gain the superiority by maneuvering. In the course of their operations the forces will hardly remain bound to one spot, as happened in the Boer War in several instances.

Still, we must unreservedly reject the idea that in this case it will be impracticable to draw lessons from this war. The fact remains that arms highly perfected and manufactured during the past decade were for the first time extensively employed. Nothing can do away with the fact that during the first part of the war the defender, though numerically inferior, was able to repulse the far superior attacker everywhere.

A German who participated in the war and has now rejoined our ranks, made the following note in his diary: "We see how few men can defend a mountainous country provided they are good shots and stick to their post. It will be difficult for a superior attacker to dislodge an inferior opponent so long as his determina-

tion to resist remains unshaken." It was sometimes asserted that the defense had been clearly proven the stronger form of action. The success of the defense, however, was less due to its strong position than to its arms and their effect.

6. ARMS.

In order to make this subject thoroughly plain, a brief comparison of the arms of the two opponents is indispensable. The arm used by the greater part of the Boers was the improved Mauser, cal. 7 mm.; the British Lee-Enfield had a caliber of 7.7 mm. The arm of the Boers was a most effective small caliber rifle of a model made as late as 1895, while the Lee-Enfield rifle dated back to 1888, having originally been the Lee-Metford rifle, and converted in 1895. The Boer rifle was a multiloader using a clip, the Lee-Enfield rifle had a detachable magazine for ten cartridges, which could be recharged only by the successive introduction of one cartridge at a time, or had to be detached and replaced by a full one. The Boer rifle was therefore far superior to the British rifle.

A comparison of the field guns gives the following: The caliber of the guns of the British field and horse batteries was 7.6 cm., the former being 15-pounders, the latter 12-pounders, both model 1884-95. Though both kinds were provided with recoil checking apparatus, they were not quick-firing guns. The British artillery also had field howitzers, cal. 12.7 cm., model 1896, firing Lyddite shells. The Boers state that their effect was small. It is reported that against men lying down their effect frequently was nothing, and that the wounds inflicted were quite light.

The British shrapnels are likewise credited with small effect, they frequently burst without rupturing the body of the shell, and without expelling all the contents. The angle of the cone of dispersion was very small and sometimes but four or five meters wide at the target, which was a great disadvantage in view of the thin skirmish lines of the Boers. The shrapnel bullets failed to cause serious wounds 100 paces from the point of burst.

The greater part of the Boer guns were quick firers. Besides some older ones, 69 modern guns were on hand, viz.:

- 8 7.5 cm. quick firers, Krupp, model 1899.
- 16 7.5 cm. quick firers, Schneider-Creusot, model 1898.
- 5 7.5 cm. quick firers, Maxim-Nordenfeldt, model 1897.
- 24 3.7 cm. automatic Maxim-Nordenfeldt guns.
- 4 3.7 cm. quick-firing mountain guns, Krupp.
- 8 12 cm. field howitzers (4 Krupps, 4 Schneider-Creusot).
- 4 15.5 cm. position guns, Schneider-Creusot.

The Schneider-Creusot guns excelled all others in point of ballistics, but they were rather sensitive. Their glycerine brakes for checking the recoil gave out frequently. The Krupp guns, whose fire effect was excellent, and the Maxim-Nordenfeldt guns proved very effective, single guns having successfully engaged British batteries at a range of 3,000 meters. They were, moreover, the only guns provided with shields of the kind adopted in France in 1897 for the artillery. The advantage of shields proof against shrapnel and rifle bullets was clearly demonstrated in the Boer War. The disadvantages of these armor shields in increasing the weight by a hundred pounds, and in rendering, when in the raised position, the guns more visible, have to be put up with. The latter disadvantage has been proven by the Boer War to be a small one.

It appears from what has been said that the Boers had fewer but far more modern guns than the British, who, however, retained the superiority in artillery through the great number of their guns. On that account the Boers avoided the introductory artillery duel, held their guns behind cover and did not reply to the artillery fire preceding the British infantry attack. The Boer guns as a rule opened fire only when the British infantry had approached within effective range.

In order not to put himself at a disadvantage from the beginning, the attacker should provide himself with arms at least equal to those of the defender. If his rifle is inferior to that of the enemy, his cannon at least should be superior, otherwise the success of the attack is jeopardized. Even our infantry of 1870, efficient as it was, gained ground against the superior Chassepot rifle only because the German field-gun held down the fire of the French.

Since the British came from a country where the manufacture of arms has reached an exceptionally flourishing condition, it was their duty to send their armies forth to battle with rifles and guns superior to those of the enemy, the more as these armies were confronted with problems of attack which, as stated above, were most difficult. Great Britain thus became aware at the very beginning of the war of the old truth that antiquated arms are the most expensive.

7. EFFECT OF MODERN ARMS.

Another old truth, too, was immediately brought home to Great Britain on the field of action. In the course of time it had been forgotten. Writing from the seat of war, and still under the impression of what he had seen, Captain von Luttwitz of the General Staff, who accompanied the British army, expressed it in the following words: "Tactical forms depend on the effect of the arm; new arms bring forth new forms." England's old regiments succumbed in every attack because at the beginning they failed to solve the problem of these new forms and to understand the fundamental conditions which assured success in an attack against the new arms. These attacks were the more apt to fail because made under conditions which, as we have shown, were rather unfavorable. The defender had the advantage of ground; the attacker had failed to avail himself of the advantages which might have accrued from a superior arm. He did retain superiority of numbers, but it was not as great as it might have been. Everything thus depended on superiority of skill in handling troops, and in that the British also failed. The British troops had for years fought none but savage people, and had become imbued with great self-reliance, and the surprises prepared for them in South Africa by the new kind of fire effect was therefore most injurious to them. This new fire effect, however, would have surprised the troops of any army. No army has yet had an opportunity to try the attack over the battle-field unobscured by smoke against the combined fire of the small caliber multiloader and of the field-gun provided with spring spade and brake. Once again it had happened in history that "with one blow facts upset all doctrinary wisdom" ("Tactical Retrospects," by Captain May). New considerations could now be advanced based on recent actual facts. Unfortunately, the history of our own army shows events similar to those that happened to the British troops on the battle-fields of South Africa. When the Prussian battalions advanced in a semi-circle to the attack of *Vierzehnheiligen* and *Hassen-*

hausen on October 14, 1806, the force of the attack broke unexpectedly under the destructive fire of the swarms of French skirmishers who were more skillful in the use of their arms and of the ground, before the French columns had struck the Prussian lines.

In the course of the War of 1870 the German infantry was saved from further sad experiences only because it was able to discard the old battle formations which in the first battles had been the cause of the destruction of some of the best regiments in a very brief space of time. I think we are all agreed that our infantry paid a high price for these experiences, and it has been asserted, not without good reason, that these things might have been avoided if we had listened to those who, soon after the battles of 1866, sought to advance new theories. No attention was paid to them. I desire to mention here in the first place the well-known pamphlet of Captain May, entitled "Tactical Retrospects of 1866." I mention these things here in order to show that changes in tactics are brought about only under the impression of experiences received on the battle-field. They are foreshadowed by the results of intellectual activity, but it remains for battle itself to speak the enlightening, saving word. It is interesting to remark that from the death of the Great King to the defeat of 1806 an extensive intellectual activity was developed in the Prussian army regarding the training and tactics of the troops. The insufficiency of the old tactics was recognized and freely discussed. Thus Heinrich Dietrich von Bülow says in his "New Tactics," published in 1805: "In future, battles will be decided by skirmish fire." He also attaches great importance to the use of natural cover on the part of skirmishers, and stated that creeping should be carefully practised. "How much blood would have been saved if the Prussian Musketeers and Grenadiers had only dared to lie down while under the enemy's fire" ("Rossbach and Jena," by Freiherr von der Goltz). It is still more remarkable, however, that a passage from the Military Testament of Frederick the Great was allowed to pass unnoticed: "In future," he says, "I would let the light battalions open the attack, sending them forward *à la débâchée* and skirmishing in order to draw the enemy's fire, and thus to enable closed troops to make the final attack in better order." In hearing these words of the king we cannot help asking: How different would have been the course of the battles of 1806 if these words had been appreciated and obeyed.

It was misfortune and defeat that made the new forms prevail so promptly in 1813. On the other hand, we allowed our success in 1866 to obscure the clearly established truths regarding infantry action, and we paid for it in August, 1870, by the heavy losses mentioned above. And though in the course of the War of 1870 our efficient troops had discarded the antiquated, dead forms of their own accord, and had made the swarm of skirmishers the main form of the infantry attack, yet we allowed our victories to lull us into a sense of security, and seventeen years elapsed after the conclusion of peace before finally, on September 1, 1888, the experience gathered by our infantry received official recognition by embodiment in the drill regulations.

8. ENGLISH AND GERMAN DRILL REGULATIONS.

In formulating new fighting tactics nearly every army in the world has more or less adopted the principles underlying our drill

regulations of 1888, because it was well known that these regulations were the result of genuine war experience, sprung from the soil of "real facts," and prepared not without fierce clashes of the greatest intellects among our infantry. There is no doubt that some of the rules of our drill regulations were made use of in the British "Infantry Drill" of 1896. Among other things the gaining of the superiority of fire over that of the defense is laid down as the guiding principle for infantry and artillery, also that the final advance of the infantry is not to take place until the attacker's artillery has gained the superiority of fire over that of the defense. We also find in the British Drill Regulations the principle laid down in Part I. of our own of allotting individual tasks to the subordinate commands. It is prescribed with equal force in both regulations that the frontal attack must be combined with overlapping or attack of a flank. Sufficient distances in the attack formation are also insisted upon in both regulations, and that in most cases a formation in three lines is advisable. There is, however, quite a difference between the regulations as regards the use of each of the three lines. In our regulations the second line soon joins the first, and the reserve is likewise employed in the final attack, while according to British regulations the first line is expected to gain single handed the main point—*i.e.*, the superiority of fire. The second line is only brought up in time for the assault.

Captain Schulz, of the 14th Bavarian Infantry, in a dispassionate discussion of British tactics and infantry training, points out how the manner of using the two lines in peace tended to cut short the action of the first line, and to make the powerful blow delivered by the second line with drums, trumpets and hurrah the main thing.

Still more questionable was the use of the third line, which awaited the result of the action in a defensive position in order to cover the retreat or proceed in pursuit.

The manner of conducting the fire action differs much in the two regulations. The British regulations give preference to the volley: the German regulations to well-aimed individual fire, and the British accordingly laid small stress on musketry instruction of the individual under battle conditions, although the ammunition allowance of 200 rounds per man per year was ample.

In the deployment of skirmishers the British regulations state that the interval between skirmishers should be announced in each case, and a skirmish line, elbow to elbow, was authorized in paragraph 48. At the beginning of the war dense skirmish lines were the rule, and thin lines were seen only after Lord Roberts's arrival in South Africa.

Lastly, we note differences between the British and German regulations regarding the opening of fire, which proved fatuous on the battle-fields of South Africa. Our drill and firing regulations fix the short, middle and long ranges so that the short ranges extend to 600 and the mid-ranges to 1,000 meters, while in the British regulations the mid-ranges begin at 500 yards (460 meters), bringing the point of demarkation between short and mid-ranges 140 meters nearer the enemy, in total disregard of the increased fire effect. It was laid down that at ranges exceeding 800 yards (735 meters), fire should be opened only under exceptional circumstances. Since according to British conceptions the mid-ranges were 265 meters shorter than ours, it followed that under their regulations the British infantry opened fire much later than we do. Late in the 90's Major-

General von Holbach, commanding our Infantry Firing School, demonstrated to all ordered there for instruction, in the most convincing form, by example and by verbal and written instruction, "that the skirmish fire opened at mid-range was no longer a mere demonstration to deceive the enemy and to veil our own deployment for attack, but was a serious and important phase of the attack itself." This in turn called for the most thorough instruction of officers and men in fire action at the mid-ranges. At the mid-ranges, *i.e.*, between 600 and 1,000 meters, well-instructed skirmishers made against head targets in five minutes hits amounting to five per cent. of the ammunition expended, and put 25 to 35 per cent. of the equally strong opposing skirmish line out of action. A glance at the tables, Appendix I. and II., will show that these figures exceed the losses of the British at Magersfontein, Colenso, and Spion Kop. There can be no doubt now that one's own fire furnishes the best means for pushing the attack over the mid-ranges from 1,000 to 600 meters. It is an old trite rule that effective, not early firing, is required; in spite of the increased fire effect which was recognized toward the end of the century and would have been appreciated without the Boer War, that rule was misunderstood and exaggerated, and it was insisted that it was imperative to advance to the mid-range of 600 meters without firing a shot. We have just shown that at 1,000 meters the arm admitted of such effective use that the enemy broke down under its fire. By approaching the enemy more closely it is no doubt intended to gain in efficacy of fire, but here the better was once again proved to be the enemy of the good, because the defender with his quick-firing arm could anticipate the fire of the rapidly advancing attacker and surprise him as the Boers surprised the British on the fields of South Africa.

British tactical ideas thus did not coincide with our own in what I consider very important points, but in fairness it should be stated that German attacks, as witnessed by British officers on our maneuver grounds, remained not without influence on their precipitate attacks which were pushed forward to short range without sufficient infantry fire. Our regulations leave much to discretion, and in consequence visiting British officers sometimes saw attacks which in consequence of lack of appreciation of the principles of our drill regulations made our system of attack appear precipitate and abbreviated in a manner admissible only under the most singular exceptions. On our level drill grounds celerity of movement and of development of attack no doubt attracted attention and made a more lasting impression on the eye of the visitors than anything else. The great rushes of our skirmishers, which according to regulations should rarely exceed 80 meters, and in fact never were less, and their wide fronts, frequently of a battalion and rarely less than two companies, appeared particularly appropriate to all who now began to consider celerity of action the chief element in the solution of the attack problem.

[TO BE CONTINUED.]

OBSERVATIONS MADE BY CAPTAIN DUNN, U. S. A., ON
THE MANUFACTURE OF WAR MATERIALS IN
THE UNITED STATES AND EUROPE.

(Internationale Revue.)

THE *Neue Militärische Blätter* of March 3, 1902, has published an account of a report by Captain Dunn of the U. S. Army, prepared for the Ordnance Department, entitled "Organization of Ordnance Experts." The author gives a full account of his travels and the experience gained in the study of the foundries of war materials in England, Germany, France, and Austria, and arrives at the following conclusions:

1. That any country will gain in giving their orders for war supplies to private foundries and to encourage them instead of having plants of their own for their manufacture.

2. That the private foundries of war materials in the United States are as yet unable to compete with like establishments in Europe.

Captain Dunn bases his views on the following observations: "In all the late inventions and constructions in the line of war materials the countries visited by me depend infinitely more on their large private foundries, such as Armstrong, Vickers-Maxim, Krupp, Schneider-Canet, St. Chamond and Skoda than on those of their own government. These countries also encourage private establishments as much as possible. If such a foundry receives orders from certain countries that are unable to manufacture their own materials, these countries pay, so to say, a tribute to the nation who protects this private foundry, because orders given by a foreign country tend to stimulate this firm to invent new models, and most naturally these new inventions are offered their own government first.

"It is a fact that during the last ten years not less than eight large European foundries have kept their numerous engineers and all the departments of their large establishments over-busy in order to construct the best model for field carriages. In view of these facts the European countries would not gain anything by having an Ordnance Department such as they have in America; it will cost less to have the orders filled by private foundries."

About the insufficiency of foundries for war materials in the United States, Captain Dunn expresses himself as follows:

"Our national interest, indeed, demands that we should pay more attention to the manufacture of war materials. Our private foundries are only beginners in this respect, and are unable to successfully compete with similar establishments in Europe in the international trade. Our wants up to this time have been too limited for the proper development of this enterprise. If we could raise our private foundries to the standard of Krupp, Vickers-Maxim, Schneider-Canet, etc., so that we could find an easy market for the material—keeping them at the same time at our disposal in case of need—it would help us enormously. But how will we get there? That is the question. In the first place we have not foundries extensive enough and manufacturers of such experience as would justify other nations to send in orders for supplies with the same confidence as they would to Mr. Krupp in Germany. With us it is the Ordnance Department which has all the difficult tasks

to perform—invent models, make all the necessary trials, recommend changes, and give a description of the objects into the smallest details."

To this the *Neue Militärische Blätter* adds the following remarks:

"We coincide in general with the views of the American officer. Nowadays, there is not but one single universal market. The Government foundries are naturally excluded, but the private firms shall compete with them as long as they can, from an economical and technical standpoint, supply the demand. This will in no way interfere with any nation's interest; on the contrary, it will be to its advantage, because the energy displayed by private firms—stimulated by international competition—benefits his own country in the first place.

"Doubtful is the question if the excessive cost of manufacturing war materials is always profitable to the private foundries, even if they find an easy market. That such is not the case, but that the manufacturing of guns has most always been fatal to young enterprises who did not have sufficient experience and capital on hand, has been proven by a number of examples in an article published in a recent issue of the *Zukunft*."

THE VETERAN SOCIETIES IN GERMANY.

(*Revue Militaire*.)

AT different times the *Revue* has described the importance of the veteran societies (*Krieger-Vereine*), the part taken by these associations from a military as well as from a social standpoint, also the inducements given them by the imperial government in order to expound, in civil life, the spirit and traditions of the army.

This institution has made great strides since 1871, and has recently been definitely organized. At first separated and one organization independent of the other, the different veteran societies gradually united, first by company, then by district and province; the different societies of the same State then united in a national federation (*Landes-Verband*). At last, after many efforts, the imperial government has created a general federation of all veteran societies of the empire (*Deutscher Kriegerbund*), which has gradually united all the societies of the different States.

It is on this account that in 1900 there were but a few isolated societies out of the general federation, notably those of the principality of Reuss (old branch), who wanted to remain independent.

The *Deutscher Kriegerbund* comprises actually 26 State federations (*Landes-Verbände*). It is governed by a central committee consisting of 6 members for Prussia, 3 for Bavaria, 3 for Saxony, 2 for Wurtemberg, 2 for Baden, and one for each of the other state federations. This committee meets in the place where the monument raised by them to the glory of Wilhelm I. stands, on the mountain of Knyffhäuser (from which it derives its name—*Knyffhäuser Ausschuss*).

There are 22,972 societies of veterans with 1,940,000 members.

The operation of these societies is at the same time of a benevolent and social nature. They have raised funds for the purpose of aiding veterans in need; they maintain 3 orphan asylums, 2 of

the Protestant faith at Romhild and at Osnabrück, one Catholic at Kauth, Silesia; they publish a special journal, the *Parole*, and an annual book; they have organized a fencing school (Kriegerfechtanstalt), an insurance in case of death (Sterbe-Kasse), and an annual lottery.

From a military point of view, it is from amongst the members of the *Kriegsvereine* that are formed the *Sanitäts-Kolonnen*, which are used in time of peace to help the transport of sick and wounded on occasions of fire, railway accidents, epidemics, and in time of war principally to reinforce the sanitary corps of the army.

But the essential function of the *Kriegsvereine*, that which is of particular value to the government, is of a social order: To cherish the bonds of military fellowship; to remind them of the time when they had the honor to be soldiers, where they have learned that a close attachment to the sovereign and the Fatherland is the first of all virtues; to keep them from any influence that may be used to bear on them by coming in contact with hostile elements and certain agitations. This is the special aim of these military associations.

This result is obtained so much easier in that the *Kriegsvereine* are recruited from all classes of society, the proprietors of great manors, the great manufacturers, directors of foundries, all holding it an honor to belong to it, as well as the farmers and laborers.

Owing to its central organization the *Kriegerbund* is becoming a symbol of the political constitution of the country, and is, so to say, a government organization. But it is exactly this preponderating situation of the central federation which is likely to injure the vitality of the original societies. Already the *Kriegerbund* is accused of playing a political rôle and of being simply an appendage to the government. Some members step out so as to be independent, and are going to organize local independent societies (such as old cavalymen, artillerymen, etc.), which tend to revive the spirit of individuality instead of strengthening the principle of centralization, which has the upper hand in the *Krieger-Vereine*.

The future will tell if the complete centralization of those veteran societies, just accomplished, will be useful or prejudicial to these institutions.



Reviews and Exchanges.

The Tactics of Coast Defense—Wisser.*

FROM its title, few would suspect the real contents of this book. In its ten chapters covering 228 pages all the elements of coast defense are touched upon or discussed at length, and the book is therefore more valuable than its name would indicate; the scope is shown by the headings of the various chapters given in the detailed review below and suggests its usefulness for all military students.

The necessity for this American pioneer in its particular field is well emphasized by the author in the preface, where he states that the only other publications of the same character in English are General Abbot's lectures, which were delivered prior to November, 1887, and General Maurice's National Defenses, which appeared in 1897. The scarcity of published literature in English and other languages, coupled with the unsettled state of many matters connected with coast artillery, made the task of preparation a very difficult one, and those of us who are to profit by Major Wisser's foresight and work are thus under many obligations.

It has been well said that there are two classes of men: in the first are those who do things, in the second those who criticise them for not doing better. In this instance I find myself in the latter class and offer as apology that in making criticism I do so with a view of suggesting improvements for a later edition, which must soon appear by virtue of the fact that many of the subjects discussed are either not thoroughly decided upon or are so changeable that statements now made concerning them will soon be obsolete.

There are in the book many good discussions, much valuable information, some errors, and many indefinite or very general statements. The latter very materially detract from its value as a text-book; in text-books all discussions should be logical, statements

*The Tactics of Coast Defense, by Major H. Wisser. (Hudson-Kimberly Publishing Co., Kansas City, Mo.)

specific, and principal points well emphasized. At times these matters are well considered, at others woefully ignored. The value of a text-book is much enhanced by having the figures and maps so that reference may be made to them without turning from the text. This may be accomplished by the reproduction of figures and putting the maps in the back on blank leaves; neither of these points seem to have been considered in this book.

We note the absence of an index, which is the first desideratum of a good reference or text-book; an improvement would be made by numbering the paragraphs, though this is not an important matter.

In several places it is not evident whether the dictum set forth is simply the opinion of the author or an accepted principle of the subject under discussion. In all cases this should be very clear. There are several instances of highly theoretical, impractical propositions, which always have a weakening effect, especially in a text-book; there are some needless repetitions, several matters mentioned in the wrong places, and some which have no place in the book at all. All the foregoing statements will be verified in the following review by chapters:

CHAPTER 1.—THE PRINCIPLES OF STRATEGY AND TACTICS INVOLVED IN COAST DEFENSE.—From a text-book standpoint, the chapter is a good one; the principles are given in italics and under each there is a good discussion showing the bearing of the particular point upon the subject in hand. The first two pages of the chapter might well be omitted, as they are devoted to untenable matters; the statements of the principles, and conclusions therefrom, would have made a stronger beginning.

CHAPTER 2.—ARMAMENT.—This is a very good chapter indeed; in it there is explained the method of arriving at the calibers of guns and number of each to be used; the uses to which the various calibers are to be applied are also given. On page 37 there is, without explanation, an arbitrary assumption of 50 per cent. high-angle guns; furthermore, in calculating for *close range*, the number of high-angle guns is increased in the same ratio as that of flat trajectory pieces. With the assumed data as to hits from ships and shore the discussion as to the number of guns is good.

From recent experience the eight-, ten-, and twelve-inch guns on disappearing carriages can be loaded with practically equal facility; this fact, combined with the armor-piercing capabilities of the three calibers, leads irresistibly to the conclusion that for harbors exposed to attack by battleships, the high-power gun should be the twelve-inch, while for those not exposed, the ten-inch should be the caliber; the conclusion on page 35 that the six-inch is the proper quick-fire gun is correct for the present, but it will no doubt be of larger caliber in a very short time. Instead of stating that the eight-inch is not an essential high-power piece, it would have been better to have stated that it has no place as a high-power gun and that modern ordnance tendency is toward making it a quick firer.

CHAPTER 3.—SITES FOR BATTERIES AND FORTS.—There is a good discussion on ideal or theoretical sites, and then the chapter closes. It would have been much better to have closed by taking a map of an actual harbor and illustrating the application of the principles to its fortification. In this chapter we find the following: "On heights over three hundred feet above the tide, open barbette batteries are admissible * * * but if the water be deep and

the site low, at least a part of the guns should be mounted on disappearing carriages." I hardly think it a recognized principle of Coast Defense that mounts for the high-power guns on a particular site should be mixed.

CHAPTER 4.—COAST ARTILLERY MATERIAL.—Material is discussed under the following heads: Artillery Material, Naval Material, Engineer Material, and Accessory Material. The chapter should be rewritten; the table on page 56 gives the very erroneous conclusion that the ten-inch is superior to the twelve-inch gun. The paragraphs under Engineer Material, as to who should locate works and as to the errors that have been made in locating them, have no place in a book of this character. The looseness of using barbette in contradistinction to disappearing should not be found in a standard book. The figures as to rapidity of fire are wrong, and the proposition to mix mounts is here repeated. In this chapter it is given as a principle of Coast Artillery Tactics that to silence the enemy's guns, a greater number of guns than he can bring into effective action must be brought to bear on him; it is to be presumed that the statement means that the defender must make more effective hits than the attacker, for the number of hits and their effect must certainly enter the question. Submarine dams and barricades might be omitted, as they will by no chance find application in our system of Coast Defense.

The information as to search-lights is too general; a chart should be given showing their position with respect to located batteries, the distance to which the lights will penetrate in clear weather and light fog, the size of lights to be used, and the manner of manipulation should all be given. The last paragraph on communications needs rewriting for clearness.

CHAPTER 5.—ORGANIZATION OF COAST ARTILLERY.—This chapter is by no means confined to actual or proper organization. In addition to organization it includes a proposed fire-control drill and concludes with schemes for fortifying harbors according to Mielichhofer and Bujnicki. A good general scheme of artillery organization is given, but it is followed by a theoretical figure of two harbors four hundred and thirty miles apart, with a railroad specially built half a day's march from the coast. How much better it would have been to have taken a couple of our fortified harbors and shown how actual railroads, towns, etc., would be utilized in a scheme of defense. The schemes of fortifying the harbors are far from satisfactorily presented; the lists of armament seem to have no connection with each other. Departure from the armament deduced in the earlier chapters should be thoroughly explained; a general statement that the geography and advantages of the defense allow a reduction of one-half in the armament is not satisfactory. After a thorough elucidation of Colonel Bujnicki's scheme, the principles should have been applied to an actual harbor. In reproducing the maps, nothing but English should have appeared, and throughout the book equivalent English measures should always have been given.

CHAPTER 6.—INSTRUCTION AND TRAINING.—This gives us some general information on battleships and cruisers, with a list of the battleships of England, France, Germany, Russia, and Italy. The importance of fire-control drill is well brought out, but the search-light question is again treated very cursorily. The chapter closes with a reference to the value of combined maneuvers and an example of

practical problems, which should be constantly practised for the purpose of perfecting the troops in fire control.

CHAPTERS 7, 8, 9.—BATTLE TACTICS OF COAST DEFENSE.—These cover sixty-eight pages and are devoted to the various phases of blockade, bombardment, attack and defense. The first chapter is devoted to the attack, the other two to the defense. In the discussions, we note page after page of paragraphs each similar to its predecessor, with nothing but the different headings to relieve the uniformity; emphasis of the most important points would very much better hold the attention of the reader. One of these weakening statements referred to is introduced in suggesting that mines be *lowered* to avoid obstructions sent against them.

CHAPTER 10.—COMBINED LAND AND NAVAL OPERATIONS.—This is a good chapter, which gives some valuable information and is in general well put.

CONCLUSION.—Three paragraphs are devoted to this. The first two belong to the preface, the other to organization.

R. P. D.



Our Exchanges.

Military.

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Vice-Treasurer.

(Vacancy.)

Capt. J. T. DEAN, 10th U. S. Infantry.

Executive Council.

Term ending 1907.

Term ending 1905.

APPLETON, D., Bvt. Brig.-Gen. N.G., N.Y.
BARRY, T. H., Colonel, A. G. Dept.
CRAIG, L. A., Major 15th Cavalry.
HUNTER, E., Colonel, J. A. G. Dept.
LIPPINCOTT, H., Colonel, Med. Dept.
MOORE, J. M., Colonel, U. S. A.
WOODRUFF, C. A., Colonel, Artillery Corps.

ALLEN, L. C., Major 16th Infantry.
BRAINARD, D. L., Major, Subsistence Dept.
DOUGHERTY, W. E., Col., 8th Infantry.
DRAVO, E. E., Lt.-Col., Sub. Dept.
MILLS, A. L., Col., Supt. U. S. M. A.
BURTON, G. H., Col., I. G. Dept.
WEBB, A. S., Bvt. Major-Gen. (late) U. S. A.

Term ending 1903.

Finance Committee.

Gen. BARRIGER.
Col. MOORE.
Col. REILLY.

FIEBEGGER, G. J., Prof. U. S. Mil. Academy.
MANSFIELD, S. M., Colonel Corps Engrs.
REGAN, JAS., Lieut.-Col. 9th U. S. Inf.
REILLY, J. W., Lieut.-Col. Ordnance Dept.
(Vacancy.)
WILSON, C. I., Colonel U. S. A.

Library Committee.

Col. MOORE.

Publication Committee.

Gen. BARRIGER, Gen. RODENBOUGH, Col. REILLY, Col. REGAN and Major CRAIG.

MEMBERSHIP AND DUES.

Membership dates from the first day of the calendar year in which the "application" is made unless such application is made after October 1st, when the membership dates from the first day of the next calendar year.

Initiation fee and dues for first year \$2.50; the same amount annually for five years subsequently. After that two dollars per year. This includes the Journal. Life membership \$50.

NOTE.—Checks and Money Orders should be drawn to order of, and addressed to, "The Treasurer Military Service Institution," Governor's Island, New York Harbor. Yearly dues include Journal.

Please advise promptly of changes of address.



Gold Medal—1903.

First Prize—Gold Medal, \$100 and Life Membership.

Second Prize—Silver Medal, Honorable Mention and \$50.

I.—The following Resolution of Council is published for the information of all concerned:

Resolved, That a Prize of a Gold Medal, together with \$100 and a Certificate of Life Membership, be offered annually by THE MILITARY SERVICE INSTITUTION OF THE UNITED STATES for the best essay on a military topic of current interest, the subject to be selected by the Executive Council, and a Silver Medal and \$50 to the first honorably mentioned essay. The Prizes will be awarded under the following conditions:

1. Competition to be open to all persons eligible to membership.
2. Each competitor shall send three copies of his essay in a sealed envelope to reach the Secretary *on or before January 1, 1904*. The essay must be strictly anonymous, but the author shall adopt some *nom de plume* and sign the same to the essay, followed by a figure corresponding with the number of pages of MS.; a sealed envelope bearing the *nom de plume* on the outside and enclosing full name and address, should accompany the essay. This envelope to be opened in the presence of the Council after the decision of the Board of Award has been received.
3. The prize shall be awarded upon the recommendation of a Board consisting of three suitable persons chosen by the Executive Council, who will be requested to designate *the essay deemed worthy of the prize*; and also in their order of merit those deserving of honorable mention.
In determining the essay worthy of the prize, the Board will be requested to consider its professional excellence, usefulness and valuable originality, as of the first importance, and its literary merit as of the second importance. Should members of the Board determine that no essay is worthy of the prize, they may designate one or more essays simply as of honorable mention; in either case, they will be requested to designate one essay as first honorable mention. Should the Board deem proper, it may recommend neither prize nor honorable mention. Should it be so desired, the recommendation of individual members will be considered as confidential by the Council.
4. The successful essay shall be published in the Journal of the Institution, and the essays deemed worthy of honorable mention shall be read before the Institution, or published, at the discretion of the Council, which reserves the right to publish any other essay submitted for a prize, omitting marks of competition.
5. Essays must not exceed fifteen thousand words, or thirty-five pages of the size and style of the JOURNAL (exclusive of tables), nor contain less than 10,000 words.

II.—The Subject selected for the Prize Essay of 1903, is
"ESPRIT DE CORPS: HOW IT MAY BE STRENGTHENED
AND PRESERVED IN OUR ARMY, UNDER THE PRESENT
ORGANIZATION AND METHOD OF PROMOTION."

III.—The Board of Award chosen for the year 1903 is as follows:

MAJOR-GENERAL ADNA R. CHAFFEE, U. S. Army.
BRIG.-GEN. GEORGE L. GILLESPIE, Chief of Engineers.
COLONEL ALBERT L. MILLS, Supt. U. S. M. Academy.

GOVERNOR'S ISLAND, N. Y.
Jan. 1, 1903.

T. F. RODENBOUGH,
Secretary.



The Seaman Prize.

MAJOR LOUIS L. SEAMAN, M.D., LL.B.
(late Surgeon, 1st U. S. Volunteer Engineers), has founded a prize in the MILITARY SERVICE INSTITUTION OF THE UNITED STATES by contributing annually

One hundred dollars in Gold

for the best Essay, subject to be named by himself, and to be approved by the Executive Council.

The subject proposed and adopted (December 10) for 1903 is:

"HOW BEST TO PROMOTE RIFLE PRACTICE AMONG
OUR COUNTRYMEN IN TIME OF PEACE
AS A PREPARATION FOR WAR."

The competition is open to all Officers or ex-Officers in good standing, of the Regular or Volunteer Service of the U. S. Army.

Three copies of the Papers on the subject must be submitted to the Secretary of the Institution, to reach his office not later than Nov. 1, 1903. Each Essay must be limited to 15,000 words, exclusive of statistics.

All other conditions will apply as those connected with the Annual, Military Service Institution, Gold Medal Prize.

The gentlemen chosen by the Council to constitute the Board of Award for the year 1903, are:—

BRIG.-GEN. CHARLES DICK (late U. S. V.).

BRIG.-GEN. GEORGE W. WINGATE (late N. G., S. N. Y.).

MAJOR STANHOPE E. BLUNT, Ordnance Dept., U. S. A.

GOVERNOR'S ISLAND, N. Y.
Jan. 1, 1903.

T. F. RODENBOUGH,
Secretary.

Prizes for Short Papers.

Extract from the Minutes of a Stated Meeting of the Executive Council of the Military Service Institution of the United States, Major General Brooke, V. P., in the Chair, held at Governor's Island, N. Y. H., March 14, 1902.

* * *
Resolved: That the regulations governing the award of Annual Prizes be and they are amended as follows:

Hancock (Infantry) Prize.

The Hancock Prize: \$50, and Certificate of Award; and \$25, and Certificate of Award: to be given for the best and second best original essays or papers, the awards to be made under existing regulations for the Gold Medal, excepting that the papers shall contain not less than 2,500 words nor more than 12,000 words, and that but one copy of each paper shall be required from the author; said essays to be critical, descriptive or suggestive, on subjects directly affecting the Infantry or Foot Service, which have been published in the JOURNAL of the Institution during the twelve months ending February 28 of each year and which have not been contributed in whole or in part to any other association, nor have appeared in print prior to their publication by the Institution, nor have been published in the JOURNAL in any previous year, and excluding essays for which another prize has been awarded. The certificate of award to be signed by the President and Secretary of the Institution and the award to be made upon the recommendation of a committee of three members of the Institution, not members of the Executive Council, two of whom shall be Infantry officers to be appointed, annually, by the President; the award to be made and announced not later than May 1 of each year.



Fry (General) Prize.

The Fry Prize: to be the same as the Hancock Prize and awarded upon the recommendation of a board of three members, not members of the Executive Council, under the same regulations for papers or essays appearing in the JOURNAL during the twelve months ending August 31 of each year, on subjects directly affecting the military service and not otherwise provided for; with the announcement not later than November 1.



Buford (Cavalry) Prize.

The Buford Prize: to be similar to the Hancock Prize, and to be awarded on the recommendation of a board of which two members shall be Cavalry officers, for papers published in the JOURNAL during the twelve months ending April 30 of each year, on subjects directly affecting the Cavalry or Mounted Service; with announcement not later than July 1.



Hunt (Artillery) Prize.

The Hunt Prize: to be similar to the Hancock Prize, and to be awarded on the recommendation of a board of which two members shall be Artillery officers, for papers published in the JOURNAL during the twelve months ending June 30 of each year, on subjects directly affecting the Artillery Service; with announcement not later than September 1.



Gold Medallists

and others to whom Prizes have been awarded.

(*G. M.*, Gold Medal; *F. H. M.*, First Honorable Mention).

1880. *G. M. Gibbon, John*; Col. 7th U. S. Infantry, and Bvt. Brig.-Gen'l U. S. A.
F. H. M. Wood, C. E. S.; Lieut. 21st U. S. Infantry.
Subject.—"Our Indian Question."
1881. (No subject for competition.)
1882. *G. M. Lazelle, Henry M.*; Lieut.-Col. 23d U. S. Infantry (now Colonel retired).
F. H. M. Greene, F. V.; Capt. Corps of Engs., U. S. A.
Subject.—"The Important Improvements in the Art of War During the Past Twenty Years, and their Probable Effect on Future Military Operations."
1883. *G. M. Wagner, Arthur L.*; Lieut. 6th U. S. Infantry (now Lieut.-Col. Adj't. Gen'l's Dept., U. S. A.).
F. H. M. Michaelis, O. E.; Capt. Ordnance Dept., U. S. A.
Subject.—"The Military Necessities of the United States, and the Best Provisions for Meeting Them."
1884. *G. M. Price, Geo. F.*; Capt. 5th U. S. Cavalry.
F. H. M. Dudley, Edgar S.; Lieut. 2d U. S. Artillery (now Major J. A. Gen'l's Dept., U. S. A.).
Subject.—"The Necessity for Closer Relations Between the Army and the People, and the Best Method to Accomplish the Result."
1885. *G. M. Woodhull, A. A.*; Bvt. Lieut.-Col., and Surgeon, U. S. A. (now Col. U. S. A. retired).
F. H. M. Dodge, R. I.; Col. 11th U. S. Infantry.
Subject.—"The Enlisted Soldier."
1886. *G. M. Woodruff, Thos. M.*; Lieut. 5th U. S. Infantry.
F. H. M. Schenck, A. D.; Lieut. 2d U. S. Artillery (now Major A. C.).
Subject.—"Our Northern Frontier."
1887. *G. M. Sharpe, Alfred C.*; Lieut. 22d U. S. Infantry (now Major Adj't. Gen'l's Dept., U. S. A.).
F. H. M. Sanger, Wm. Cary; Q. M. 2d Brig. Staff, N. G. S. N. Y. (now Assistant Secretary of War).
Subject.—"Organization and Training of a National Reserve for Military Service."
1888. (No Prize awarded.)
Subject.—"The Danger to the Country from Lack of Preparation for War."
1889. *G. M. Read, G. W.*; Lieut. 5th U. S. Cavalry (now Capt. 9th Cav.).
Subject.—"A Practical Scheme for Training the Regular Army in Field Duties for War."
1890. (No subject for competition.)
1891. *G. M. Reed, H. A.*; Lieut. 2d U. S. Artillery (now Capt. Art'y Corps).
F. H. M. Pettit, J. S.; Capt. 1st U. S. Infantry (now Major 1st Inf.).
Subject.—"The Terrain in its Relations to Military Operations."
1892. *G. M. Stuart, S. E.*; Lieut. Ordnance Dept., U. S. A.
Subject.—"The Army Organization best Adapted to a Republican Form of Government, which will Ensure an Effective Force."
1893. *G. M. Scriven, G. P.*; Captain (now Major) Signal Corps, U. S. A.
F. H. M. Hamilton, W. R.; Lieut. 5th U. S. Artillery (now Capt. A. C.).
Subject.—"The Nicaragua Canal in Its Military Aspects."
1894. *G. M. Ellis, E. A.*; Captain 8th U. S. Cavalry (now Major 13th Cav.).
F. H. M. Steele, M. F.; Lieut. 8th U. S. Cav. (now Capt. 6th Cav.).
Subject.—"Discipline; Its Importance to an Armed Force, and the Best Means of Promoting and Maintaining it in the United States Army."

1895. **G. M. Sharpe, H. G.**; Captain (now Colonel) Sup. Dept., U. S. A.
Subject.—"The Art of Supplying Armies in the Field, as Exemplified During the Civil War."
1896. **G. M. Pettit, J. S.**; Captain (now Major) 1st U. S. Infantry.
F. H. M. Hill, R. G.; Lieut. 20th U. S. Infantry.
Subject.—"The Proper Military Instruction for our Officers. The Method to be Employed, its Scope, and Full Development."
1897. **G. M. Foote, S. M.**; Lieut. 4th U. S. Artillery (now Capt. Art'y C'ps).
F. H. M.* Glassford, W. A.; Capt. (now Major) Signal Corps, U. S. A.
Subject.—"Based on the Present Conditions, and Past Experiences, How Should our Volunteer Armies be Raised, Organized, Trained, and Mobilized for Future Wars?"
1898. (No Essays received in competition.)
Subject.—"Our Water Boundaries, and our Interior Waterways; How to Utilize and Defend them; Their Influence in Case of Invasion."
1899. **G. M. Britton, Edward E.**; Supernumerary Colonel N. G. N. Y.
F. H. M.* Barry, Herbert; Lieut. (now Capt.) Squad. A., N. G. N. Y.
Subject.—"In What Way Can the National Guard be Modified, so as to Make it an Effective Reserve to the Regular Army in Both War and Peace."
1900. (No Gold Medal awarded.)
F. H. M.* Allen, H. T.; Capt. 6th U. S. Cavalry, (late Major U.S.V.)
Subject.—"The Organization of a Staff Best Adapted for the United States Army."
1901. **G. M. Stuart, Edwin R.**; Lieut. Corps of Engineers, U. S. A.
Subject.—"Are Disappearing Guns Essential to the Defense of our Seaports?"

The Seaman Prize.

1900. **Munson, E. L.**; Captain Medical Department, U. S. A.
Subject.—"The Ideal Ration for an Army in the Tropics."
1901. **Rhodes, Charles D.**; Captain 6th U. S. Cavalry.
Subject.—"The Utilization of Native Troops in our Foreign Possessions."

Hancock (Infantry) Prize.

1902. (1st) **Steele, M. F.**; Captain 6th U. S. Cavalry.
Subject.—"Some Army Defects."
 (2d) **Lewis, E. M.**; Captain 20th U. S. Infantry.
Subject.—"Discipline."

Buford (Cavalry) Prize.

1902. (1st) **Allen, H. T.**; Captain 6th U. S. Cavalry.
Subject.—"Cavalry Training."
 (2d) **Reichmann, Carl**; Captain 17th U. S. Infantry.
Subject.—"Campaign, Orange Free State, 1900."

Bunt (Artillery) Prize.

1902. (1st) **Chester, James**; Major of Artillery, Retired.
Subject.—"Artillery Organization."
 (2d) **Maxim, Hudson**.
Subject.—"Maximite."

Fry (General) Prize.

1902. (1st) **Kenan, Owen T.**; late Captain U.S.V.
Subject.—"The American Soldier in the Tropics."
 (2d) **Pierce, Palmer E.**; Captain 13th U. S. Infantry.
Subject.—"Squad Formation."

*and Honorarium, \$50.

General Meeting

In accordance with Article VI of the Constitution, a General Meeting of the Military Service Institution will be held in its Council Room on Wednesday, January 14, 1903, at 2 P.M.

T. F. Rodenbough,
Secretary.

Governor's Island,
January 1, 1903.